

Patents and Equivalents –
A comparative study of the doctrine
of equivalence in Anglo–American
and Nordic patent laws

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Tekijä: Miko Leach
Ohjaaja: Jaakko Husa



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Tiivistelmä – Referat – Abstract <p>Substanssiaiheena on patenttioikeudellinen ekvivalenssioppi, jota tutkitaan oikeusvertailun keinoin. Tarkoituksena on selvittää, miten angloamerikkalaisessa ja pohjoismaisessa patenttioikeudessa käsitetään patentin ekvivalentt loukkaus. Selvityksen puitteissa vertaillaan kyseessä olevia eri lähetyksistä. Samanlaisille lähetyksistä pohditaan syitä oikeudellisen harmonisaation, juridisten ammattien globalisoitumisen ja transnationaalisten patenttioikeusteorioiden pohjalta. Poikkeaville lähetyksistä pohditaan syitä oikeuspluralismin ja lainsäädännöllisten tavoitteiden vastakkaisuusien seurauksena.</p> <p>Aihe on ajankohtainen ja mielenkiintoinen, koska viime aikoina patentin suojapiirin tulkinnassa ja patentinloukkausarvioinnissa on tapahtunut merkittäviä uudistuksia. Tästä on esimerkkinä englantilaista patenttioikeutta vuonna 2017 mullistanut <i>Actavis v Eli Lilly</i> –prejudikaatti Ison-Britannian korkeimmasta oikeudesta. Patentinhaltijan liiketaloudellisen edun ja kolmansien osapuolien yleisen edun kannalta on tärkeä ymmärtää mahdollisimman tarkasti, kuinka laajasti patentin suojapiiriä voidaan tulkita. Tämän avulla selkeytyy arviointi siitä, kuinka laaja-alaisesti patentti suojaa keksintöä ekvivalenteilta ratkaisuilta. Näiden kysymysten moninaisuutta lisää patentt loukkausarvioinnin luonne. Esimerkiksi vaikka Euroopassa patenttien myöntäminen ja suojapiirin tulkinta on harmonisoitu Euroopan patenttisopimuksen avulla, patentin loukkaukseen liittyvät arvoinnit kuuluvat toistaiseksi jäsenvaltioiden omaan toimi –ja harkintavaltaan.</p> <p>Vertailtavat maat ekvivalenssiopillisine lähestymistapoineen ovat Yhdysvallat, Englanti, Ruotsi ja Suomi. Maat on valittu osittain sen perusteella, että kaksi edustavat <i>common law</i> –oikeuskulttuuria ja kaksi edustavat eurooppalaista säädösoikeudellista oikeuskulttuuria. Amerikkalainen ekvivalenssioppi on maailmalla laajasti tunnettu. Englannissa taas on koettu vastikään merkittävä uudistus patentin suojapiirin tulkinnassa ja patentinloukkausarvioinnissa. Ruotsissa on Suomeen verrattuna vakiintuneempi ekvivalenssioppi. Samanlaisuuksia ja poikkeavuuksia avataan neljällä eri vertailevalla kysymyksellä, jotka liittyvät ekvivalenssiopin oikeuskäytännölliseen soveltamiseen, perustaan, rajoittamiseen ja kolmansien osapuolien oikeusturvakeinoihin. Tämän jälkeen samanlaisuuksia ja poikkeavuuksia pohditaan tarkemmin ensimmäisessä kappaleessa mainittujen seikkojen valossa.</p> <p>Lopputuloksena on havaittu, että maiden välillä on lukuisia samanlaisia lähetyksistä ekvivalenssiopin suhteen. Siitä huolimatta maiden välillä on myös selviä poikkeavia lähestymistapoja. Esimerkiksi amerikkalainen ja ruotsalainen patenttioikeus vaikuttavat olevan lähempänä toisiaan kuin englantilainen ja suomalainen patenttioikeus, vaikkakin englantilainen patenttioikeus on vuodesta 2017 lähtien muistuttanut lähestymistavoiltaan enenevässä määrin amerikkalaista ja ruotsalaista patenttioikeutta ekvivalenssiopin suhteen. Sitä vastoin suomalaisessa patenttioikeuskäytännössä ei eräiden viimeaikaisten markkinaoikeuden ratkaisujen tulkinnan perusteella ole havaittavissa yhtä selkeää tulkintamallia kuin muissa vertailtavissa maissa ekvivalenssiopin soveltamisen suhteen. Johtopäätös on, että lähestymistapa suomalaisessa patenttioikeudessa muistuttaa siten enemmän englantilaista <i>purposive construction</i> –tulkintamallia (ks. Ison-Britannian korkeimman oikeuden nyttemmin kumoama <i>Kirin-Amgen</i> –prejudikaatti vuodelta 2004).</p> <p>Yhdeksi vaikuttavaksi tekijäksi samanlaisissa lähestymistavoissa todetaan oikeudellisten ammattien globalisoituminen. Tuomarien käymä kansainvälinen dialogi, juristien kansainvälistyvä kouluttautuminen ja oikeustieteilijöiden kansainvälinen tutkimustyö ovat osaltaan vaikuttaneet samanlaisiin tulkintamalleihin ekvivalenssiopista. Yhdeksi vaikuttavaksi tekijäksi poikkeavissa lähestymistavoissa todetaan oikeuspluralismi. Patenttioikeudellisen käytännön taustalla vaikuttavat patenttioikeudelliset teoriat poikkeavat toisistaan (ks. <i>central</i> ja <i>peripheral</i> sekä <i>patent bargain</i> –tulkintateoriat), mikä on osaltaan vaikuttanut poikkeaviin tulkintamalleihin ekvivalenssiopista.</p>		
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I. Introduction

1. Subject of thesis

While inventiveness thrives on competition, inventiveness also suffers from the effects of competition. This jurisprudential dilemma underlines most patent law jurisdictions, which have aimed to address the issue in various ways. The question is about finding a balance between two extremes: how to ensure sufficient protection for inventors in order to incentivise technological progress? Conversely, how to ensure that patents do not distort competition by trumping the interests of third parties with the special monopoly status that patents confer to patentees? ¹ This issue has repercussions in many of the modern industries in which time and money are of the essence.

Inventions benefit from the dedicated industriousness of inventors alongside considerable amounts of capital investment. How does the patent law of a country achieve the balance between the abovementioned extremities? As a general starting point, the monopoly of patents is found through the construction of patent claims, which means defining the scope of protection of a patent through an interpretation of the patent claims. ² This process defines the patent monopoly, which is essentially the scope of protection of the patent against other competing inventions. Based on a generalised understanding, what is claimed in the patent claims falls under the scope of protection of the patent, and what is not claimed is disclaimed. ³ Lord Russell opined, “The function of the claims is to define clearly and with precision the monopoly claimed, so that others may know the exact boundaries of the area within which

¹ For example, see the discussion about the relationship between patent law and competition law in Oesch and others (2017), 260. The authors highlight the conflict, which exists between the monopoly nature of patents and competition law where competition law seeks to control the concentration and market behaviour of monopolies. The authors also contend that while patents *per se* are not a form of prohibited restriction on competition, the abuse of such monopoly rights can amount to acts prohibited under the provisions of competition law, such as Article 102 TFEU.

² For a broad discussion on the concept of claim construction, see e.g. Aplin and Davis (2016), 793–810. The authors examine the development of claim construction in English patent case law and outline some differences, which occur between English and German standards of claim construction.

³ See the famous judgment by the House of Lords of the United Kingdom, the former highest court of appeal of the United Kingdom, in *Electrical and Musical Industries Ltd v Lissen Ltd* (1939) 56 RPC 23, [39] (Lord Russell). Lord Russell, delivering the leading judgment, took the strict view that patent claims were the limit to the patent monopoly, and anything outside the patent claims was not to be protected under the scope of protection of the patent.

they will be trespassers. Their primary object is to limit and not to extend the monopoly.”⁴ In a similar way of reasoning, many patent courts have tended to interpret patent claims rather strictly against the patentee so that the relationship between the patent monopoly and its relative competition remains under control.

However, the developments of patent laws across the globe show the increasing prominence of the doctrine of equivalence, which has the effect of including equivalent inventions under the protection of the patent monopoly.⁵ The basic idea is that the patent protects the invention from both normal infringement and infringement under the doctrine of equivalence.⁶ This means that a competitive invention can be found infringing a patent even if the alleged infringing invention does not fall strictly speaking within the meaning of the patent claims. Countries have developed different legal standards for addressing this phenomenon, which is known as equivalence.

The purpose of this thesis is to compare the standards of certain patent laws to the doctrine of equivalence, and underline both similarities and differences in these standards. In doing so, reasons behind the observable differences and similarities are discussed in order to understand why similarities and differences prevail in this area of patent law. The overarching idea is that the patent laws under comparison have ended up with similar or different standards of the doctrine of equivalence as a result of legal phenomena, such as harmonisation, globalisation and pluralism. These phenomena are explored in attempt to explain why a similar or different standard of the doctrine of equivalence might have been achieved in the given patent laws. To look at similarities and differences, instead of only looking at one or the other, is the goal of a

⁴ *Ibid.*

⁵ See Levin (2017), 320–324 for an insightful commentary on the doctrine of equivalence. In an overview of Swedish patent law, she notes that by virtue of the doctrine of equivalence, technically alike (i.e. equivalent) replacements to elements disclosed in the patent claims do not escape the scope of protection of the patent. Even though the replacements may seem outside the patent claims, the scope of protection of the patent extends beyond the strict language of the patent claims to any elements deemed equivalents of the elements disclosed in the patent claims. Despite the prevalence of the doctrine of equivalence in Swedish patent law, it is interesting to note the somewhat critical tone Levin adopts in respect of the doctrine of equivalence. In her view, competitors should be able to form a clear picture of the inventor’s patent monopoly on a reading of the patent claims, which is not necessarily outright possible under the doctrine of equivalence.

⁶ For a more detailed outline of patent infringement, refer to pp. 11–13 of the thesis.

balanced enquiry into the doctrine of equivalence, which will be more advantageous at elucidating the knowledge, which the research topic seeks to unveil.⁷

In further detail, the research topic studies the standards to the doctrine of equivalence between two common law and two civil law countries. Namely, the standards of the doctrine of equivalence in the United States, England, Sweden and Finland form the core of the comparison. The reason for the selection is that I have completed a Bachelor of Laws in England where I studied extensively intellectual property law, and developed a keen interest in patent law. In 2017, the Supreme Court of the United Kingdom gave a landmark judgment, which reformed the English law of patent infringement and claim construction.⁸ The judgment elucidated the legal standard, which applies to infringement under the doctrine of equivalence, and the judgment also completely reshaped the standards of patent infringement in English patent law. This revised standard resulted in much discussion and debate among judicial professionals.⁹ In addition, as part of my Master's Degree in Law at University of Helsinki, I took part in the annual Nordic Intellectual Property Moot Court Competition in which I took the responsibility of researching and drafting the statements of claim and defence in relation to patent infringement. The facts of the fictive moot court case permitted our team to claim for infringement under the doctrine of equivalence. Having researched the standards of the Nordic countries, I observed that there is an established doctrine of equivalence in Swedish patent law, and that the Swedish standard can be said to stand in contrast to the seemingly less developed standard in Finnish patent law. For the reasons outlined above, I became fascinated to study how patent laws deal with the doctrine of equivalence, and what aspects might have led the patent laws to develop similar or different standards.

⁷ The balanced approach of exploring both similarities and differences finds its support in Dannemann (2019), 404–421. For example, he argues in reference Mill's work that similarities and differences are equally important for comparison, and that the combination of both substantially advances our knowledge more than preferring one over the other. See in particular Dannemann (2019), 405.

⁸ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48.

⁹ See for example Shah and others (2017), 778–783. The authors describe the effects of the landmark judgment as "shaking up the approach to patent infringement" and a "significant shift". In addition, see Walsh (2019), 408–440. She sees the landmark judgment as instrumental for achieving better harmonisation across the European patent systems on the basis that the judgment showed measures of "judicial cooperation", which is key to harmonisation outside the realms of the legislature.

The selection of the United States is my interest for American patent law with which I have not had the chance to familiarise myself previously. Seen as the law of the United States belongs to the common law family, I think it makes a good partner to compare with England in order to make the comparison balanced with two common law and two civil law countries. Despite my initial unfamiliarity with American patent law, it is widely known that there is an ingrained American doctrine of equivalence to which even the *rationae decidendi* of some English judgments have referred.¹⁰ The presumption may be that common law countries have similar standards in terms of law, which is why it is interesting to test the validity of this presumption between the United States and England, in the context of the law of claim construction patent infringement. Moreover, Sweden and Finland is an intriguing pair because the patent laws of both countries have been subject to a high degree of pan-Nordic legal harmonisation even before the ratification of the European Patent Convention (“EPC”).¹¹

2. Methodology and structure

The central method of the thesis is comparison, which is undertaken with four comparative questions.¹² The goal is to explore different aspects of the doctrine of equivalence in such a way that the questions themselves are general in nature and not specific *per se* to any of the given patent laws. The observations arising from analysis of the patent laws in light of the questions enable to systemise what similarities and differences in the given standards to the doctrine of equivalence are perceptible, and why similarities and differences exist in the first place.¹³ In this instance, the comparative questions rely complementarily on the method of

¹⁰ See for example the discussion about the United States ‘doctrine of equivalents’ by Lord Hoffman in *Kirin-Amgen Inc. v Hoechst Marion* [2004] UKHL 46, [2005] RPC 9, [36]–[49] (Lord Hoffman). The judge seems to have taken a critical view of the doctrine of equivalents, which the judge believed to have been born out of “despair”.

¹¹ For more details, see Norrgård (2009), 7. He explains, *inter alia*, how the opinions of the Committee in charge of planning a unified Nordic patent legislation (NU 1963:6) resulted in uniform interpretation of the patent claims across the Nordic countries, even before Finland joined the European Patent Convention (“EPC”) in 1996. Many of the similarities in Finnish and Swedish patent laws owe to the work of the Committee.

¹² See Husa (2018), 38. He cites Schlesinger according to whom, “To compare means to observe and to explain similarities as well as differences.” The definition reflects how this thesis understands and approaches comparison.

¹³ For example, see Husa (2018), 41–42. He explains the features of third-stage comparison, which involves “comparison within a certain field of law where differences or similarities are looked for in a more systematic way so that there is an external conceptual reference frame that is not taken from (within) the systems being

legal reasoning, which in this instance is identified as reasoning arguments with references to legislation, case law and legal literature.¹⁴

The structure of the thesis is divided into four parts. The second part, which follows after the introduction, is an overview of the patent laws of the United States, England, Sweden and Finland. That part explains the nature of patents, the legislative frameworks, the requirements for patent validity and patent infringement. The third part comprises the comparison, which is followed by the systemisation of the observable similarities and differences in the fourth part. As such, the structure follows to an extent what Siems describes as “traditional comparative law”, which in my view provides a coherent way of approaching the research topic at hand.¹⁵

II. Overview of patents

1. Purpose of patents

The first question one might ask is what patents are and what function they provide. According to the definition by Aplin and Davis, patents are “understood as a monopoly right over the commercial exploitation of an invention, granted for a limited time (usually 20 years).”¹⁶ Similarly, Haarmann outlines that in market economies where inventions form an important part of trade, patent systems are nowadays by and large similar: a new invention can be granted a patent, which gives the patentee the exclusive right to control the exploitation of the invention for a given time.¹⁷ Any rationales behind patent systems seem to be universal in nature because countries with effective patent systems seek to encourage the innovativeness and productivity of inventors. In my understanding, patents are a form of guarantee that any time, effort and capital invested into innovations will be safeguarded. This

studied.” Moreover, he notes that the interest for knowledge in third-stage comparison is of a normative kind and thus similar to the interests in doctrinal study of law. The approach in this thesis takes some its influence from Husa’s observations about third-stage comparison.

¹⁴ For example, see Alexander and Sherwin (2008), 3. The authors make the argument that legal reasoning is ordinary reasoning applied to legal problems, and that legal reasoning encompasses moral reasoning, empirical reasoning and deduction from authoritative rules.

¹⁵ According to Siems, the four steps of traditional comparative law include on deciding the research question and countries, describing the law of the countries, comparing the laws of the countries by exploring the reasons for unexpected similarities and differences and finally, critically evaluating the findings with possible policy recommendations. For the more specific outline, refer to Siems (2018), 15.

¹⁶ Aplin and Davis (2016), 603.

¹⁷ Haarmann (2014), 167.

is how patent systems incentivise inventors to realise new technological advancements and keep improving the current state of technology.¹⁸

2. Legislative frameworks

Patents are regulated extensively through national and international legislation, which govern the granting of patents as well as patent infringement, *inter alia*. As concerns England, Sweden and Finland, the laws governing patents stem from both the supranational and national level. Each of these countries is a signatory of the European Patent Convention (“EPC”), which regulates the granting of European patents, and harmonises the standards of patent validity across the EPC member states.¹⁹ These are some of the core functions of the EPC, in addition to aiming at a unified standard for the scope of protection of patents across the jurisdiction of the EPC. The European Patent Office (“EPO”) processes patent applications, which patentees applying for European patents file to the office either directly or through national patent offices. A European patent is understood as a bundle of patents, which need to be validated in each of EPC member states where the patentee seeks protection for the invention.²⁰ If a patentee applies for a national patent through a national patent office, protection is conferred only within that given jurisdiction. This links to the principle of territoriality, which defines in part the scope of patents. On the other hand, a European patent extends in its territoriality to each EPC member state in which the European patent has been validated.²¹

¹⁸ For a more in-depth analysis of certain rationales behind patent law, see Landes and Posner (2003), 294–333. For example, the authors take the view that one economic rationale behind the protection provided by patents lies in the difficulty the inventor (or producer) is likely to come across while attempting to recoup the fixed costs of research and development when the product or process forming part of the invention is readily copiable.

¹⁹ The EPC is a legislative framework entirely separate from the European Union. On the other hand, the European Union has competence in certain areas of patent law through the effect of directives (e.g. the Directive on the Protection of Biotechnological Inventions of 1998). Currently, the Union is working to institute the Unified Patent Court, which in the future shall adjudicate issues of patent infringement and revocation concerning European patents with unitary effect. It is to be noted that the scope of this thesis excludes matters concerning the Agreement on a Unified Patent Court of 2013. Refer to Haarmann (2014), 20 and 204–212 on more information about the unified patent system, which is to enter into force eventually.

²⁰ Norrgård (2009), 48.

²¹ Aplin and Davis (2016), 603.

In addition to the EPC, each member state has its own law regulating the granting of patents. In England, the applicable law is the Patents Act 1977, in Sweden it is the Swedish Patent Law (“*Patentlag*”) and in Finland it is the Finnish Patent Law (“*Patenttilaki*”). The national laws mirror the provisions of the EPC as a result of wide legislative harmonisation. However, the EPC does not stipulate what acts amount to patent infringement on which basis the proscription of patent infringement depends on national patent laws. This is in accordance with Article 64(3) EPC. However, the EPC has harmonised the way in which courts define the scope of protection of patents, which is connected to patent infringement because judges must define the scope of protection of a patent prior to judging whether there has occurred patent infringement. An additional legal instrument, which informs courts how to define the scope of protection of patents, and how to balance the rights of the patentee against the alleged infringer and other third parties, is the Protocol on the interpretation of Article 69 (“Protocol”).

On the other hand, American patent law operates on the federal level, which means that patent law is uniform throughout the United States. Thus, “The present statutory scheme for American patent law is embodied in Title 35 of the United States Code (“35 U.S.C.”).”²² This law is supplemented by the American Invents Act (“AIA”), which entered into force in 2011. Significantly, the act amended the patent system from a standard of “first to invent” to the standard of “first to file”, which means that the first inventor to have filed a patent application has priority to the granting of the patent as opposed to the first inventor to have invented the invention. The act also effected changes to certain procedural aspects in the patent system.²³ The United States Patent and Trademark Office (“USPTO”) is the authority in charge of processing patent applications and granting patents.²⁴ In American patent law, 35 U.S.C. governs the legal requirements for granting a valid patent and proscribes patent infringement.

3. Requirements for patent validity

The requirements for patent validity under the EPC are harmonised between all member states. Thus, the provisions of patent validity in the EPC are mirrored in the national patent

²² Reid and others (2018), 255.

²³ *Ibid* 258.

²⁴ *Ibid* 334.

laws. The core requirements are novelty, inventive step and industrial application. Pursuant to Article 54(1) EPC, as well as Section 2(1) of the Patents Act 1977, Section 2 of the Swedish Patent Law and Section 2 of the Finnish Patent Law, an invention is considered new if it does not form part of the prior art. This is the novelty requirement, which is a question of whether the invention is or is not anticipated by prior art. This means that the new invention cannot be something that is known already in the state of art. As regards inventive step, Article 56 EPC, as well as Section 3 of the Patents Act 1977, Section 2 of the Swedish Patent Law and Section 2 of the Finnish Patent Law, provides that an invention is deemed inventive if the inventive step of the invention is not obvious to the person skilled in the art, having regard to the state of art. It is to be noted that in Sweden and Finland, both the requirements of novelty and inventive step are codified under Section 2. In EPC member states, the standard test for assessing inventive step is the problem and solution approach of the EPO. The Enlarged Board of Appeal established the test in its *Bayer/Carbonless Copying* judgment.²⁵ The test is three-part:

- (1) Determining the closest prior art by looking at patent's technical teachings and claims.
- (2) Establishing an objective technical problem to be solved, by comparison with what the invention does and what the prior art discloses. ^[SEP]
- (3) Considering whether the claimed invention, starting from the closest prior art, and bearing in mind the objective technical problem, would have been obvious to the person skilled in the art.²⁶

Lastly, in accordance with Article 57 EPC, as well as Section 4 of the Patents Act 1977, Section 1 of the Swedish Patent Law and Section 1 of the Finnish Patent Law, an invention is industrially applicable when it can be made or used in any industry. For example, as was established in the *BDP1 Phosphatase/MaxPlanck* judgment²⁷ of the Enlarged Board Appeal, a practical application and profitable use of the invention must be disclosed in order to satisfy the requirement of industrial application.

In the United States, "A patent applicant is entitled to a patent only if the invention is new, adequately disclosed, enabled, useful, non-obvious, and fits within statutorily defined subject

²⁵ *Bayer/Carbonless Copying* T1/80 [1979–85] B EPOR 250.

²⁶ Aplin and Davis (2016), 774.

²⁷ *Max-Planck/BDP1 Phosphatase* T-870/04 [2006] EPOR 14.

matter.”²⁸ 35 U.S.C. § 101 provides that a patent can be granted for any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof. Furthermore, 35 U.S.C. § 102 provides for the requirement of novelty, which involves assessment of whether or not the patent application discloses an invention, which has been made available to the public already before the filing date of the patent application. In addition to the requirement of novelty is the requirement of non-obviousness in 35 U.S.C. § 103 pursuant to which a patent may not be obtained if the differences between the claimed invention and prior art on the filing date of the claimed invention are obvious to a person having ordinary skill in the art. Lastly, there is a hurdle of disclosure requirements under 35 U.S.C. § 112. According to Reid and others, “It would be difficult to overstate the importance of the patent law’s disclosure requirements, which are contained in the first two paragraphs of 35 U.S.C. § 112...”²⁹ The authors specify the four requirements as enablement, best mode, written description and clear claiming (or definiteness), which must be satisfied so that a patent may be granted. Furthermore, the disclosure needs to support the scope of the patent claim because 35 U.S.C. § 112 requires the patentee to give the public fair notice of the scope of the claimed invention.³⁰

4. Patent infringement

In England, Sweden and Finland, patent infringement pertains under the competence of national patent law. In this thesis, the concept of infringement is limited to that of direct infringement, which under English, Swedish and Finnish patent laws coexists with indirect infringement. In essence, the difference between the two varieties of patent infringement is about who the infringer is: under direct infringement, the infringer is directly the defendant. On the other hand, under indirect infringement, the defendant’s actions cause a third party to infringe. Pursuant to Section 60(1) of the Patents Act 1977, Section 3 of the Swedish Patent Law and Section 3 of the Finnish Patent Law, direct infringement occurs by making, disposing of, offering to sale, using or importing a patented product. If the patent is for a process, the foregoing applies to any product obtained by the means of applying the patented process.

²⁸ Reid and others (2018), 264.

²⁹ *Ibid.*

³⁰ *Ibid.*

When courts adjudicate over patent infringement proceedings, the judges need to define the scope of protection of the patent in order to determine whether or not the patent has been infringed. The standard of determining the scope of protection is harmonised under Article 69 EPC, and the later amendments made under Article 2 of the Protocol. Pursuant to Article 69 EPC, as well as Section 125 of the Patents Act 1977, Section 39 of the Swedish Patent Law and Section 39 of the Finnish Patent Law, the patent claims define the scope of protection. In addition, Articles 1 and 2 of the Protocol add that the scope of protection must not be interpreted as defined by the strict, literal wording of the patent claims nor should the scope be interpreted beyond the wording of the patent claims as something, which the patentee has not contemplated. Furthermore, account must be taken of any element, which is an equivalent to an element claimed in the patent claims. The Protocol requires a balance to be struck between fair protection for the patentee and a reasonable degree of certainty for third parties. It is rooted in the patent laws of certain EPC member states that patent infringement is bifurcated between literal infringement and infringement under the doctrine of equivalence. Such is the case in Swedish patent law, *inter alia*. However, this was not the case in English patent law until the law changed in 2017 with the *Actavis v Eli Lilly* judgment from the Supreme Court of the United Kingdom. Moreover, it is not clear whether Finnish patent law makes the distinction between two types of patent infringement, or whether all patent infringement is evaluated under a single legal test.

In the United States, 35 U.S.C. § 271 proscribes patent infringement by declaring, "Whoever without authority makes, uses, offers to sell, or sells any patented invention...infringes the patent."³¹ Furthermore, Reid and others explain, "Analyzing a patent infringement action involves determining the meaning and scope of the patent claims asserted to be infringed, and comparing the properly construed claims to the infringing device. The first step known as claim construction or claim interpretation, is decided by the court, while the second step is determined by the finder of fact."³² Like Swedish patent law, American patent law is no stranger to a bifurcated legal test governing patent infringement, "Although 35 U.S.C. § 112 requires the patentee to particularly point out and distinctly claim his or her invention, courts do not always limit the patentee to the literal meaning of the claims... The courts have, therefore, established the Doctrine of Equivalents or "DOE," which permits infringement to

³¹ Reid and others (2018), 376.

³² *Ibid.*

be found even where the accused product or process does not literally infringe the patent claim...”³³

III. Comparison

1. Application of the doctrine of equivalence

In the first part of the comparative analysis, the question in light of which the standards of the doctrine of equivalence in the given patent laws are compared is the following:

When does the doctrine of equivalence apply and how is it applied – what is the legal test for determining infringement under the doctrine of equivalence, and what are the factual and legal prerequisites for the application of the doctrine of equivalence?

Application of the doctrine of equivalence in the United States

In American patent law, the doctrine of equivalence, or doctrine of equivalents (“DOE”) as it is known in American patent tradition, applies in cases of alleged patent infringement where the infringement occurs outside the literal scope of the patent claims. In other words, the elements of the alleged infringing invention do not correspond literally to those disclosed in the patent claims. To this end, “although 35 U.S.C. § 112 requires the patentee to particularly point out and distinctly claim his or her invention, courts do not always limit the patentee to the literal meaning of the claims.”³⁴ The courts follow an element-by-element analysis, which means that infringement under the doctrine of equivalents occurs if every element in the patent claims is met with a corresponding equivalent in the alleged infringing invention. Reid and others phrase it so that infringement under the doctrine of equivalents occurs “...if each element of the claimed invention has a substantial equivalent in the accused product or process or if the difference between each element in the accused product or process and the claim elements are insubstantial. Thus, in determining infringement under the DOE, the fact-finder must employ an element-by-element analysis.”³⁵

³³ Reid and others (2018), 378.

³⁴ *Ibid.*

³⁵ *Ibid.*

The emphasis is on the requirement that each element of the patent claims needs to have a substantial equivalent in the alleged infringing invention so that the doctrine of equivalents applies. Moreover, each equivalent element must differ only insubstantially from the elements in the patent claims. The legal test for applying the doctrine of equivalents was crystallised in the *Warner-Jenkinson* judgment ³⁶ of the Supreme Court of the United States. The court held, "Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole...An analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, result of the claimed element, or whether the substitute element plays a role substantially different from the claimed patent." ³⁷

Thus, the crucial requirement for the application of the doctrine of equivalents is that every patent claim must be interpreted for the elements they disclose. This means that the patent claims must not be severed when construing the scope of protection in context of assessing patent infringement under the doctrine of equivalents. Each element of the patent claims must be examined against each element of the alleged infringing invention, and the differences between the two sets of elements must be insubstantial in view of function, way and result. This is also known as the tripartite test. ³⁸ If the equivalent elements match the function, way and result of the elements in the patent claims, the doctrine of equivalents is applicable. On the other hand, if the equivalent elements do not match the function, way and result, any difference can be deemed substantial, and thus infringement under the doctrine of equivalents does not apply. In order to determine the legal meaning of a substantial equivalent, the Federal Circuit has stated that "to be a substantial equivalent, the element substituted in the accused product for the element set forth in the claim must not be such as would substantially change the way in which the function of the claimed invention is performed." ³⁹ Therefore, an important parameter is that the elements in a patent claim and elements in an alleged infringing invention must achieve substantially the same function and if the function of the

³⁶ *Warner-Jenkinson Co. Inc. v Hilton Davis Chem. Co.* 520 U.S. 17 (1997).

³⁷ *Ibid* at para [40].

³⁸ *Bridges* (1992), 139–154. He describes the assessment of insubstantiality in the function, way and result of the alleged infringing invention as the "tripartite test".

³⁹ *Pennwalt Corp. v Durand-Wayland, Inc.*, 833 F.2d 931, 935 (Fed. Cir. 1987) (*en banc*).

elements in the alleged infringing invention differs from that of the elements in the patent claims, it is not possible to claim for patent infringement under the doctrine of equivalents.

Application of the doctrine of equivalence in England

Similarly to American patent, the doctrine of equivalence in English patent law applies in cases of alleged patent infringement where the infringement is claimed to occur outside the literal scope of the patent claims. The most recent Supreme Court of the United Kingdom judgment in *Actavis v Eli Lilly* ⁴⁰ set out a revised standard of patent infringement. The judgment overruled the previous landmark judgment handed out a decade earlier by the House of Lords in *Kirin-Amgen* ⁴¹ in which the court had held that there was no doctrine of equivalence in English patent law.

However, currently the *Actavis v Eli Lilly* judgment provides a two-limb test for determining patent infringement, which no longer excludes the doctrine of equivalence. The first limb targets normal patent infringement, which possibly correlates with literal infringement, and the second limb targets patent infringement under the doctrine of equivalence. The two-part test reads:

- (i) Does the variant infringe any of the claims as a matter of normal interpretation; and, if not,
- (ii) Does the variant nonetheless infringe because it varies from the invention in a way or ways, which is or are immaterial? ⁴²

The purpose of the second limb is to capture ‘equivalents’ and the legal requirement for this is that the difference between the patented invention and the alleged invention is immaterial. The president of the Supreme Court of the United Kingdom at the time, Lord Neuberger, gave the leading judgment, and further explained how to determine whether or not a difference is immaterial. For this purpose, he revisited Hoffman J’s (as he then was) formulation of the so-called “*Protocol* questions” in the *Improver* judgment. ⁴³ Upon revision of the questions, Lord Neuberger revised and reformulated the questions as follows:

⁴⁰ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48.

⁴¹ *Kirin-Amgen Inc. v Hoechst Marion* [2004] UKHL 46, [2005] RPC 9.

⁴² *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48, [54] (Lord Neuberger).

⁴³ *Improver Corporation v Remington Consumer Products Ltd* [1990] FSR 181.

- (1) Notwithstanding that it is not within the literal meaning of the relevant claim(s) of the patent, does the variant achieve substantially the same result in substantially the same way as the invention, i.e. the inventive concept revealed by the patent?
- (2) Would it be obvious to the person skilled in the art, reading the patent at the priority date, but knowing that the variant achieves substantially the same result as the invention, that it does so in substantially the same way as the invention?
- (3) Would such a reader of the patent have concluded that the patentee nonetheless intended that strict compliance with the literal meaning of the relevant claim(s) of the patent was an essential requirement of the invention? ⁴⁴

Lord Neuberger explained that the answers to the first two questions must be affirmative and the answer to the last question must not be affirmative in order to establish immaterial variance. The first improved Protocol question analyses the inventive concept of a patented invention with the idea that competitive inventions cannot avoid patent infringement solely by changing some aspect of the patented invention, granted that the competitive invention achieves the same substantial result in substantially the same way as the patented invention.

The second improved Protocol question assesses obviousness in relation to the knowledge that the variant achieves the same substantial result in substantially the same way as the patented invention. Lord Neuberger held that the person skilled in the art was not limited with their common general knowledge to the priority date of the patent, but instead that person could be imbued with more knowledge so as to cover the actual time when the variant infringed the patented invention. The judge reasoned this as follows, “When one is considering a variant which would have been obvious at the date of infringement rather than at the priority date, it is, as explained in para 63 above, necessary to imbue the notional addressee with rather more information than he might have had at the priority date.” ⁴⁵ In general the person skilled in the art would undertake analysis of obviousness at the priority date of the patent, but certain variants of patented inventions benefit from technological developments, which have occurred after the priority date. Therefore, as the judge reasoned, “This reformulated second question should also apply to variants which rely on, or are based on, developments which have occurred since the priority date, even though the notional

⁴⁴ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48, [66] (Lord Neuberger).

⁴⁵ *Ibid* at para [65] (Lord Neuberger).

addressee is treated as considering the second question as at the priority date. Such an approach is supported by the desirability of both consistency of approach and pragmatic justice. It seems right in principle to have the same question, including the same assumption (i.e. that the variant works) for all cases.”⁴⁶ Crucial in light of the second question, and defining the meaning of ‘immaterial’, is that the person skilled in the art, also known as the notional addressee in English patent law, considers it obvious that the alleged infringing invention would achieve the same result in substantially the same way as the patented invention as a result of being informed how the alleged infringing invention functions and how it works. In addition, the person skilled in the art is assumed to know that the variant works. Lord Neuberger stated, “That, I think, would be a fair basis on which to proceed in terms of balancing the factors identified in article 1 of the Protocol...”⁴⁷

The third improved Protocol question looks at whether the patentee has delimited the scope of the patent claims. In practice, delimiting the scope of the patent claims by more specific claim drafting means that the patentee has contemplated a narrower scope of protection, and therefore the patent should be confined to a narrower scope of protection. When a patentee intends strict compliance with the language of the patent claims, it is assumed that the scope of protection of the patent is limited to the precise formulation of the patent claims created by the patentee. In this type of instance, the scope of protection is lower and the patent is less likely to capture immaterial variants within its scope of protection.

Application of the doctrine of equivalence in Sweden

In Swedish patent law, the doctrine of equivalence applies in cases of alleged patent infringement where an alleged infringing invention has presented technically like replacements to elements disclosed in the patented invention. The simple act of replacing the claimed elements with technical equivalents does not allow the infringing invention to fall outside the scope of protection of the patent. Even though such an alleged infringing invention is undoubtedly outside the strict meaning of the patent claims, nonetheless the alleged infringing invention falls within the scope of protection of the patent.⁴⁸ According to Domeij, the developments of the Swedish standard of the doctrine of equivalence is most

⁴⁶ *Ibid* at para [63] (Lord Neuberger).

⁴⁷ *Ibid* at para [62] (Lord Neuberger).

⁴⁸ Levin (2017), 320–322.

apparent in the case law of the Stockholm District Court, the Svea Court of Appeal and the Supreme Court of Sweden, which have exclusive jurisdiction in patent proceedings.⁴⁹ The Svea Court of Appeal has reiterated the legal standard for applying the doctrine of equivalence recently in its *Easypark* judgment⁵⁰, which concerned an appeal of a judgment given by the Stockholm District Court in the matter of Easypark's alleged infringement of Payazzo's European patent for a slot machine. The Svea Court of Appeal clarified the steps of the applicable legal test in the following manner:

- (1) The inventive idea is exploited in its entirety; and
- (2) The infringing invention – despite differences between it and the patent claims –reaches the same technical result as the patented invention; and
- (3) The differences between the infringing invention and the patented invention must be obvious to the person skilled in the art; and
- (4) The solution of the infringing invention is equivalent to the solution of the patented invention.^{[L]⁵¹_{SEP}}

To summarise the court's approach, the defendant must have taken advantage unlawfully of the patent's inventive idea or concept, which is the core of the patent. The inventive concept refers to the way in which a patented invention solves an underlying technical problem. The defendant's invention must solve the same problem as the patented invention, which can mean that the inventions form part of the same industries and compete against each other in the same markets. The modifications introduced by the defendant to the elements disclosed in the patent claims must be obvious to the person skilled in the art, which means that the modifications must lack inventive step. Lastly, the solutions of how both the patented invention and the contested invention resolve the underlying technical problem must be equivalents of one another, which means that there are no substantial differences between the inventions. In 2019, the Stockholm District Court reinstated this as the applicable legal test in its *Actavis v Eli Lilly* judgment⁵², which was concerned the same matter as the proceedings in *Actavis v Eli Lilly*⁵³ in England.

⁴⁹ Domeij (2010), 2.

⁵⁰ *Suomalaiset Raha-Automaatit Payazzo Finland Oy AB v Easypark AB*, Svea Court of Appeal, case PMT 744-16 of 17 November 2016.

⁵¹ *Ibid* 6.

⁵² *Actavis AB v Eli Lilly and Company*, Stockholm District Court, case PMT 2097-15 of 31 January 2018.

⁵³ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48.

Application of the doctrine of equivalence in Finland

In Finnish patent law, the answer to the question is not as straightforward as it is in the context of American, English and Swedish patent law. Therefore, this part is markedly longer than for example the previous part on the application of the doctrine of equivalence in Swedish patent law in which the answer regarding the application of the doctrine of equivalence is straightforward and unambiguous. In contrast, more case law material and analysis are necessary to tease out a satisfactory answer in the context of Finnish patent law.

Firstly, in Finnish patent law there is a theoretical distinction between literal infringement and infringement outside the literal interpretation of the patent claims.⁵⁴ The premise of patent infringement is the all-elements rule according to which infringement occurs if the alleged infringing invention satisfies all the elements found in the patent claims. If the alleged infringing invention is found to satisfy the patent claims based on a literal construction of scope of protection of the patent, literal infringement occurs. In the alternative, the alleged infringing solution can be found to infringe under the doctrine of equivalence in cases where literal infringement does not apply, but instead where the defendant has made insignificant amendments in the alleged infringing invention in relation to the elements disclosed in the patent claims.⁵⁵

The Finnish market court and higher courts of appeal have exclusive jurisdiction in patent infringement proceedings. Unlike the other three countries and their respective courts where patent proceedings are handled, neither the Finnish market court nor the higher courts of appeal, the Court of Appeal ("*Hovioikeus*") and the Supreme Court ("*Korkein oikeus*"), have set out a clear legal test for determining infringement under the doctrine equivalence. The Finnish Patent Law does not provide a standard to be applied for patent infringement by equivalence either. The question arises whether patent infringement under the doctrine of equivalence actually exists in Finnish patent law because there do not seem to be any notable judgments in which the courts would have held an alleged infringing invention to be infringing a patent under the doctrine of equivalence. In contrast, there have been cases in the

⁵⁴ Norrgård (2009), 209–247.

⁵⁵ *Ibid.*

United States, England and Sweden where the courts have found that a defendant has infringed the claimant's patent under the doctrine of equivalence.

Some recent judgments from the Finnish Market Court allude to the possibility of the Finnish standard of the doctrine of equivalence. However, none of these judgments deemed that the defendant would have infringed the patent under the doctrine of equivalence, although one of the judgments suggested the possibility of finding infringement under the doctrine of equivalence based on the facts of the case. Listed in a chronological order, the judgments in question are *Kelosta Oy*⁵⁶, *Merck Sharp Dohme Corp.*⁵⁷, *Eli Lilly and Company and Eli Lilly Finland AB*⁵⁸ and *Valutec AB and Valutec Oy*.⁵⁹ Starting from the *Kelosta Oy* judgment, the Finnish Market Court reiterated the requirement to take account of equivalents in determining the scope of protection of a European patent and to identify elements, which are equivalents to the elements disclosed in the patent claims.⁶⁰ By referring to a Finnish government proposal⁶¹, the court contended Section 39 of the Finnish Patent Law complies with Article 69 EPC even though Section 39 does not contain the term 'equivalents'. Based on the government proposal, the court also asserted that the Protocol does not necessitate additional guidelines to the interpretation of the Finnish Patent Law.⁶² Furthermore, the court stated that the requirement for the application of the doctrine of equivalence is whether the alleged infringing invention solves the same technical problem as the patented invention.⁶³ The court did not outline any other requirements, nor did it find infringement under the doctrine of equivalence in this case. In the *Valutec AB and Valutec Oy* judgment from 2020, the Finnish Market Court made the same observations as in the *Kelosta Oy* judgment in respect of the

⁵⁶ *Kelosta Oy v Riikku Rakenteet Oy*, Finnish Market Court, case number 170 of 16 March 2016.

⁵⁷ *Merck Sharp Dohme Corp. and MSD Finland Oy v Sandoz A/S*, Finnish Market Court, case 708 of 21 November 2017.

⁵⁸ *Eli Lilly and Company ja Oy Eli Lilly Finland Ab v Actavis Group PTC ehf. and Ratiopharm Oy*, Finnish Market Court, case 872 of 29 December 2017.

⁵⁹ *Valutec AB and Valutec Oy v Anaika Soinlahti Timber Oy and Anaika Wood Group Ltd Oy*, Finnish Market Court, case 107 of 13 March 2020.

⁶⁰ *Kelosta Oy v Riikku Rakenteet Oy*, Finnish Market Court, case number 170 of 16 March 2016, paras [27]–[29].

⁶¹ Government Proposal number 92 of 2005; cited in Finland as *HE 92/2005 vp*.

⁶² *Kelosta Oy v Riikku Rakenteet Oy*, Finnish Market Court, case number 170 of 16 March 2016, para [31].

⁶³ *Ibid* at para [32].

doctrine of equivalence ⁶⁴, and did not find infringement under the doctrine of equivalence on the merits of the case.

In the *Merck Sharp Dohme Corp.* judgment, the Finnish Market Court noted that if certain preconditions are met, patent claims are given a broader construction as opposed to a strictly literal one. ⁶⁵ The court noted that account must be taken of technological knowledge and intuition, patent law tradition and expert opinion. ⁶⁶ In addition, the court emphasised that by principle, an equivalent invention identified by the patentee, but not disclosed in the patent claims, should not be considered to fall within the scope of the protection of the patent after the priority date of the patent. The court reasoned this by explaining that extending protection to such an extent as described would risk legal certainty, which third parties are entitled to expect. ⁶⁷ This line of reasoning led the court to conclude that there could not be infringement under the doctrine of equivalence in the given case.

However, in *Eli Lilly and Company and Eli Lilly Finland AB*, the Finnish Market Court suggested that it might have found infringement under the doctrine of equivalence although the court did not specify any legal test for applying the doctrine of equivalence. The case concerned the same matter of litigation as the *Actavis v Eli Lilly* judgment in England. In Finland, however, Eli Lilly and Company through its Finnish subsidiary Eli Lilly Finland AB only sought preliminary injunctions against the Finnish subsidiary of Actavis in respect of the distribution of a medicament, which in England and other European countries had been held infringing the European patent of Eli Lilly. The Finnish Market Court referred to the English *Actavis v Eli Lilly* judgment and remarked how the Supreme Court of the United Kingdom had held that the patent owned by Eli Lilly extended protection to a range of equivalent methods of producing the given medicament. ⁶⁸ The court declared that it was not possible to state outright whether or not the invention produced and sold by Actavis in Finland would be

⁶⁴ *Valutec AB and Valutec Oy v Anaika Soinlahti Timber Oy and Anaika Wood Group Ltd Oy*, Finnish Market Court, case 107 of 13 March 2020, paras [19]–[20] and [78].

⁶⁵ *Merck Sharp Dohme Corp. and MSD Finland Oy v Sandoz A/S*, Finnish Market Court, case 708 of 21 November 2017, para [76].

⁶⁶ *Ibid.*

⁶⁷ *Merck Sharp Dohme Corp. and MSD Finland Oy v Sandoz A/S*, Finnish Market Court, case 708 of 21 November 2017, para [160].

⁶⁸ *Eli Lilly and Company ja Oy Eli Lilly Finland Ab v Actavis Group PTC ehf. and Ratiopharm Oy*, Finnish Market Court, case 872 of 29 December 2017, para [74].

likely to infringe the patent either literally or under the doctrine equivalence.⁶⁹ However, the English judgment was sufficient for the claimant to obtain a preliminary injunction against the defendant for the distribution of the allegedly infringing product in the Finnish healthcare industry.⁷⁰ Either the judgment was the result of pragmatism, in other words providing the European patent with equal treatment in another EPC member state, or the Finnish Market Court might have agreed implicitly with the English standard of the doctrine of equivalence.

Although the above-discussed judgments have shed some light onto the possible standard of applying the doctrine of equivalence in Finland, the courts have not laid out, or at least written down a systematic legal test as the courts have done in the United States, England and Sweden. In Finnish patent literature, Norrgård has discussed how the doctrine of equivalence might be applied in Finnish patent law. He views that the prerequisite for infringement under the doctrine of equivalence is that there is an insubstantial difference between the alleged infringing invention and the elements disclosed in the patent claims.⁷¹ In order to assess the legal meaning of insubstantiality, Norrgård has formulated a four-step test, which draws influence comparatively from the English *Protocol* questions⁷² and the German *Schneidmesser* questions.⁷³ I have translated the legal test in English, as follows:

- (1) Does the infringing invention solve the problem solved by the patented invention? If the answer is negative, there is no infringement under the doctrine of equivalence. However, if the answer is affirmative;
- (2) Does the solution to the problem of the infringing invention have substantially the same result (i.e. does it lead to the same outcome) as the solution claimed by the patent? If the answer is negative, there is no infringement under the doctrine of equivalence. However, if the answer is affirmative;
- (3) Was the solution of the infringing invention obvious to the person skilled in the art in respect of the solution claimed by the patent at the priority date (or exceptionally, on the date of infringement)? If the answer is negative, there is no infringement under the doctrine of

⁶⁹ *Ibid* at para [75].

⁷⁰ *Ibid* at paras [89]–[90].

⁷¹ Norrgård (2009), 217–218.

⁷² Hoffman J (as he then was) formulated the *Improver* questions, or *Protocol* questions as they are known more commonly, in *Improver Corpn v Remington Consumer Products Ltd* [1990] FSR 181.

⁷³ Federal Supreme Court of Justice of Germany, X ZR 135/01, GRUR 2002, 519, “*Schneidmesser IP*”.

equivalence. However, if the answer is affirmative it is to be considered whether there still are grounds for excluding the possibility of infringement under the doctrine of equivalence, such as:

(4) Was the solution of the infringing invention part of the state of art or was it obvious in respect of the state of art on the patent's priority date? If the answer is affirmative, there is no infringement under the doctrine of equivalence.⁷⁴

The first and second steps of the legal test are similar to the observations, which the Finnish Market Court has made: that the alleged infringing invention must solve the same technical problem in substantially the same way as the patented invention. However, the court held that the way in which the alleged infringing invention must solve the technical problem should be equivalent of the way the patented invention solves the problem. In contrast, Norrgård's legal test refers to the concept of substantiality. The third and fourth steps of the legal test involve analysis, which has not been part of any of the Finnish Market Court judgments outlined previously. Therefore, I am not certain whether it is possible to conclude how the doctrine of equivalence is applied in Finnish patent law practice. Of course, what is known is that the courts refer often to the government proposal concerning patent equivalents, but it should be noted that the proposal dates from 2005 and the most recent developments in the doctrine of equivalence in other EPC member states have occurred over the past few years. Therefore, the Finnish standard that the courts seem to be applying might be well out of date, and possibly it should be revised in light of developments elsewhere in the EPC jurisdiction.

Similarities and differences in the application of the doctrine of equivalence

The most conspicuous similarities and differences in American, English, Swedish and Finnish patent laws in terms of application of the doctrine of equivalence is that courts in each of the countries with the exception of Finland have set out clear legal tests for determining how the doctrine of equivalence is applied. These tests have been formulated in landmark judgments. To restate this, the *Warner-Jenkinson* judgment from the Supreme Court of the United States, the *Actavis v Eli Lilly* judgment from the Supreme Court of the United Kingdom and the *Easypark* judgment from the Svea Court of Appeal have reviewed the preceding case law on the application of the doctrine of equivalence, and either reinstated or reformed the standards of applying the doctrine of equivalence.

⁷⁴ Norrgård (2009), 217–218.

On the other hand, in Finland several judgments from the Finnish Market Court touch upon the concept of ‘equivalents’, but none of the judgments seem to show that the judges would be applying any clearly and systematically formulated legal test for determining how the doctrine of equivalence applies. The simplified conclusion would be that Finnish patent law does not treat the doctrine of equivalence under a separate legal test, and that all matters of patent infringement are judged under a single legal test. The contrast to the other three countries is that each of the others have a bifurcated legal test as a standard of patent infringement, which means that there is either literal infringement or infringement under the doctrine of equivalence. Nonetheless, Norrgård has created a workable model, which the Finnish courts could invoke for determining how the doctrine of equivalence applies in Finnish patent law. This would require that the Finnish courts make a formal distinction between literal patent infringement and patent infringement under the doctrine of equivalence.

Secondly, some apparent similarities between each country’s legal tests for the application of the doctrine of equivalence are the key concepts employed in the legal tests. Thus, in American patent law the differences between the patented invention and allegedly infringing invention must be insubstantial in terms of function, way and result. Similarly, in English patent law the patented invention and the immaterial variant must achieve substantially the same result in substantially the same way. In addition, it must be obvious to the person skilled in the art, knowing that the variant works, that it does so in substantially the same way. The slight difference seems that in American patent law, the all-elements rule applies, whereas in England that rule does not seem to apply given the formulation of the second limb of the *Actavis v Eli Lilly* legal test, “Does the variant nonetheless infringe because it varies from the invention in a way or ways which is or are immaterial?”⁷⁵ Here, ‘in a way or ways’ suggests that all-elements of the patent claims need not be met in the immaterial variant. Moreover, in American patent law, the legal test is not presented in a question format unlike in English patent law and Finnish patent law theory (Norrgård’s model). Here, American patent law is similar to Swedish patent law in which the legal test is not in a question format either.

In Swedish patent law, the inventive idea must have been exploited in its entirety, which suggests the requirement that all-elements of the patent claims be met in the allegedly

⁷⁵ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48, [54] (Lord Neuberger).

infringing invention. In addition, like in American and English patent laws, in Swedish patent law the allegedly infringing invention must reach the same technical result as the patented invention, and the differences between the patented invention and allegedly infringing invention must be obvious to the person skilled in the art. What sets Swedish patent law slightly apart from American and English patent laws, at least in terms of formulation of the legal test, is the requirement that the solution to the underlying technical problem of the allegedly infringing invention be an equivalent of that of the patented invention. However, in practice this requirement might resemble the ‘function’ part of the American tripartite test and the second of the revised Protocol questions in English patent law. The Swedish requirement also seems similar to the first question in Norrgård’s test, which asks whether the alleged infringing invention solves the same problem as the patented invention.

In Finnish patent law theory, Norrgård’s model asks whether substantially the same result is achieved by the patented invention and the alleged infringing invention. This seems to be a common characteristic between the legal tests of all of the patent laws in question. In addition, the role of the person skilled in the art is of equal significance in the legal tests of each patent law. However, in English patent law the person skilled in the art is not limited to the priority date. Instead, the person’s knowledge can extend to the date of infringement just like in American patent law. This is not the case in Swedish patent law; in Finnish patent law theory, Norrgård is not conclusive on this matter and leaves the question open. Furthermore, it is not certain whether the all-elements rule should be met under Norrgård’s model for the doctrine of equivalence. However, he states that the all-elements rule is key in Finnish patent infringement proceedings ⁷⁶, which leads to the belief that the all-elements rule should be met also when applying the doctrine of equivalence in Finland.

2. Legal basis for the doctrine of equivalence

In the second part of the comparative analysis, the question in light of which the standards of the doctrine of equivalence in the given patent laws are compared is the following:

⁷⁶ Norrgård (2009), 230.

On what basis is account taken of equivalents in proceedings concerning patent infringement? What past and present considerations have given effect to taking account of equivalents in the first place?

Legal basis for the doctrine of equivalence in the United States

In American patent law, the basis for taking account of equivalents in patent infringement proceedings is established in patent law tradition. The doctrine of equivalents is not codified *per se* in statute, but instead it is enshrined in case law. In other words, “Although 35 U.S.C. § 112 requires the patentee to particularly point out and distinctly claim his or her invention, courts do not always limit the patentee to the literal meaning of the claims. To do so ”would convert the protection of a patent into a hollow and useless thing” (*Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.*, 339 U.S. 605, 607 (1950)).”⁷⁷

Graver Tank is a landmark judgment in patent infringement because it supported the development of the application of the doctrine of equivalents with the formulation of the “same way” requirement, which later on became one of the three components of the tripartite test.⁷⁸ The judgment also provided for reasons as to why American courts may consider the doctrine of equivalents in cases of patent infringement. The Supreme Court of the United States handed the judgment, and Justice Jackson, giving the leading opinion, provided considerations in deciding on the matter of equivalents. He outlined, “The essence of the doctrine is that one may not practice a fraud on a patent.”⁷⁹ This seems to be the most important aspect about the doctrine of equivalents, and this principle leads to other incidental principles, ”...to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing. Such a limitation would leave room for – indeed encourage – the unscrupulous copyist to make unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law.”⁸⁰

⁷⁷ Reid and others (2018), 378.

⁷⁸ Bridges (1992), 139–154.

⁷⁹ *Graver Tank & Mfg. Co. v. Linde Air Prod. Co.*, 339 U.S. 605, 608 (1950).

⁸⁰ *Ibid* at para [856].

It is apparent that Justice Jackson referred to the purpose of the patent system and the embedded proprietary aspects of patent law. He viewed that disallowing extended protection from the patentee would result in undesirable freeridership of patents and compromise the interests that patentees have invested in their inventions. This line of reasoning is emblematic of a system, which fosters strong proprietary rights, thus enabling proprietors to effectively exclude third parties. In addition, the judge opined that allowing strong protection of patents would maintain the purpose of the patent system. If a patentee were not allowed such strong protection, “It would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system.”⁸¹ One of the key purposes of any patent system is to encourage technological advancements⁸², which is why it is important to encourage patentees to disclose their inventions and the inventive processes as fully as possible so that society may later benefit from the patent’s teachings. In addition, full disclosure puts third parties in a position where they have more legal certainty as to their rights and duties in relation to a patent.

In the *Graver Tank* judgment, the legal basis behind the doctrine of equivalence was discussed thoroughly, and Justice Jackson revised the legal test for the application of the doctrine of equivalents. However, the case was not the first of its kind to invoke the doctrine of equivalents in American patent law. According to Bridges, “The term ‘Doctrine of Equivalents’ was coined in the early case *McCormick v Talcott*, in which the Court stated that ‘[the original inventor] will have [the] right to treat as infringers all who make [the machine] operating on the same principle, and performing the same function by analogous means or equivalent combinations, even though the infringing machine may be an improvement of the original’ ...”⁸³ The case was heard and judged by the Supreme Court of the United States as early as 1857, which according to Bridges is a time during which the Patent and Trademark Office of the United States did not require patents to contain claims.⁸⁴ Certainly, this shows that the courts in the United States have a well-established and longstanding legal basis for taking account of equivalents in patent infringement proceedings.

⁸¹ *Ibid.*

⁸² For a concise and thorough discussion on the purposes of patent systems and the varying rationales, which justify patent systems, see Landes and Posner (2003), 294–333.

⁸³ Bridges (1992), 139–154.

⁸⁴ *Ibid.*

Legal basis for the doctrine of equivalence in England

The basis for taking account of equivalents in English patent law is a matter of some more complexity. Indeed, many English judicial professionals are likely to acknowledge this remark due to the complex developments of the law of claim construction and patent infringement. The question about the basis for the doctrine of equivalence can be answered with two steps, one of which concerns the legislative basis and the other, which concerns the case law or patent law tradition basis.

To answer the first step, the legislative basis for taking account of equivalents in England is based on Article 2 of the Protocol, which is a supranational legislative instrument pertaining under the EPC. Article 2 of the Protocol provides essentially that during the construction of the patent claims and defining the scope of protection of the patent, account needs to be taken of any element, which can be deemed an equivalent of an element disclosed in the patent claims. Article 2 of the Protocol was drafted already in 2000 and entered into force towards the end of 2007.⁸⁵ However, it was not until 2017 when the Supreme Court of the United Kingdom established the English doctrine of equivalence, which is based directly on the term ‘equivalents’ provided in Article 2 of the Protocol. This leads to the second step of answering the question, which involves an overview of case law about patent infringement leading up to the landmark *Actavis v Eli Lilly* judgment.

In English patent law, the doctrine of equivalence is deemed to have its roots in English patent law tradition dating back to the 19th century. According to Sir Hugh Laddie, “At the time when the rules about natural and ordinary meanings were more or less rigidly applied, the United Kingdom and American courts showed understandable anxiety about applying a construction which allowed someone to avoid infringement by making an ‘immaterial variation’ in the invention as described in the claims. In England, this led to the development of a doctrine of infringement by use of the ‘pith and marrow’ of the invention (a phrase invented by Lord Cairns in *Clark v Adie* (1877) 2 App Cas 315, 320) as opposed to a ‘textual infringement’.”⁸⁶ Sir Hugh Laddie explained that the doctrine of the pith and marrow was conjured in order to escape the tradition of literalism, which had pervaded English patent law

⁸⁵ Aplin and Davis (2016), 623.

⁸⁶ Sir Hugh Laddie (2009), 3–38.

tradition early on. The idea of literalism is that the scope of protection of the patent is limited strictly to the language of the patent claims without any regard to the context of the patent. Such standard would have favoured third parties more than patentees.⁸⁷

The line of cases from *Catnic*⁸⁸ to *Improver*⁸⁹, *Kirin-Amgen*⁹⁰ and finally *Actavis*⁹¹ illustrates the developments of the doctrine of pith and marrow to purposive construction of patent claims and ultimately into the doctrine of equivalence. Lord Neuberger explained in *Actavis v Eli Lilly*, in his overview of preceding English case law, that in the *Catnic* judgment Lord Diplock had identified two types of infringement, which are textual infringement and infringement of the ‘pith and marrow’ of the invention.⁹² Furthermore, “there was a single cause of action, which involved asking the question: whether persons with practical knowledge and experience of the kind of work in which the invention was intended to be used, would understand that strict compliance with a particular descriptive word or phrase appearing in a claim was intended by the patentee to be an essential requirement of the invention so that any variant would fall outside the monopoly claimed, even though it could have no material effect upon the way the invention worked.”⁹³ In accordance with the *Catnic* principles of claim construction, the key element was whether the language of the patent claims was so definitive that it confined the patent to a narrower scope of protection. If the language in objective terms could be understood as broader, the patentee would be entitled to additional protection through the doctrine of pith and marrow.

However, later on in the *Improver* judgment, Hoffmann J (as he then was) sought to provide more clarity to circumstances in which the court could deviate from the language of the patent claims and locate the scope of protection through a contextual construction of the claims. Accordingly, “If the issue was whether a feature embodied in an alleged infringement which fell outside the primary, literal or a contextual meaning of a descriptive word or phrase in the

⁸⁷ *Ibid.* As a further remark, refer to Sir Hugh Laddie (2009), 3–38 for a broad historical analysis of literalism and the early standards, which English judges applied to patent infringement starting in the 19th century.

⁸⁸ *Catnic Components Ltd. v Hill & Smith Ltd.* [1982] R.P.C. 183.

⁸⁹ *Improver Corpn v Remington Consumer Products Ltd* [1990] FSR 181.

⁹⁰ *Kirin-Amgen Inc. v Hoechst Marion* [2004] UKHL 46, [2005] RPC 9.

⁹¹ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48.

⁹² *Ibid* at para [35] (Lord Neuberger).

⁹³ *Ibid.*

claim ('a variant') was nevertheless within its language as properly interpreted, the court should ask itself the following three questions: (1) Does the variant have a material effect upon the way the invention works? If yes, the variant is outside the claim. If no (2) would this (i.e. that the variant had no material effect) have been obvious at the date of publication of the patent to a reader skilled in the art? If no, the variant is outside the claim. If yes (3) would the reader skilled in the art nevertheless have understood from the language of the claim that the patentee intended that strict compliance with the primary meaning was an essential requirement of the invention? If yes, the variant is outside the claim.”⁹⁴

Lord Hoffman (as he had become) took the opportunity to revise his reasoning some 15 years later from handing out his leading judgment in *Improver*. Thus, in *Kirin-Amgen*, he emphasised, “The question is always what the person skilled in the art would have understood the patentee to be using the language of the claim to mean. And for this purpose, the language he has chosen is usually of critical importance.”⁹⁵ He took account of the doctrine of equivalence, but dismissed its application in England due to concerns of extending the monopoly of the patentee, “Once the monopoly had been allowed to escape from the terms of the claims, it is not easy to know where its limits should be drawn”, and concluded that, rather than adhering to literalism and adopting the doctrine, the solution was ‘to adopt a principle of construction which actually gave effect to what the person skilled in the art would have understood the patentee to be claiming’, as Lord Diplock had done in *Catnic* [1982] RPC 183.”⁹⁶ Part of his reasoning was that Article 69 EPC does not provide for interpreting the scope of protection outside the patent claims, which were deemed to confine the scope of protection of the patent. In addition, he then explained that the Protocol questions outlined in *Improver* were simply guidelines for the application of purposive construction of the patent claims in cases where equivalents are concerned, “[T]he principle of purposive construction as Lord Diplock and [Lord Hoffman] had explained it, gave effect to the requirements of the Protocol and was the bedrock of patent construction, universally applicable, whereas the Protocol or *Improver* questions were simply guidelines for applying that principle to equivalents... more useful in some cases than in others.”⁹⁷ The idea of purposive construction was to abandon a literal construction of claims, but nevertheless to construe the

⁹⁴ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48, [39] (Lord Neuberger).

⁹⁵ *Ibid* at para [42] (Lord Neuberger).

⁹⁶ *Ibid* at para [43] (Lord Neuberger).

⁹⁷ *Ibid* at para [44] (Lord Neuberger).

claims in accordance with the language of the claims and in context of the invention. Key to this was to construe the claims as the person skilled in the art would understand the claims on the priority date. For example, the courts' purposive construction of patent claims did not enable the defendant to escape patent infringement simply by introducing 6–8° degree deviation from the claimant's patented "vertical", or 90°, bar extending a steel lintel.⁹⁸ However, in another case, purposive construction of patent claims allowed endogenous recombinant DNA technology to avoid infringement of a patent for exogenous recombinant DNA technology.⁹⁹ It is clear that purposive construction also caught immaterial variants although it is not clear whether it would do so as purposefully as the doctrine of equivalence.

Upon critical review of the English case law and approaches taken by other EPC member states, Germany and France *inter alia*, Lord Neuberger found that it was necessary to introduce a doctrine of equivalence into English patent law. In particular, the judge took issue of how the previous English approaches seemed to conflate the two separate issues of patent claim construction and patent infringement, "I have considerable difficulties with the notion that there is a single conflated, or compound, issue, and, even if that notion is correct, that that issue raises a question of interpretation. Indeed, in my view, to characterise the issue as a single question of interpretation is wrong in principle, and unsurprisingly, therefore, can lead to error."¹⁰⁰ As Lord Neuberger reasoned his argument, claim construction is a matter of law, which means that the court deals with construing the claim through the lens of the person skilled in the art. On the other hand, infringement depends on expert witness and therefore, it involves a factual matrix, which informs the court's reasoning in applying any doctrine of patent infringement.

The principles, which justify the English doctrine of equivalence, stem in part from the Protocol and in part from patent law tradition. The wording of the Protocol seems to require a doctrine of equivalence even though the provisions do not state it unequivocally. However, as Lord Neuberger opined, "Any patent system must strike a balance between the two competing factors referred to at the end of article 1 of the Protocol, namely a fair protection for the patent proprietor and a reasonable degree of legal certainty for third parties. The balance cannot be struck on an *ad hoc* case-by-case basis without any guiding principles, as that would mean

⁹⁸ *Catnic Components Ltd. v Hill & Smith Ltd.* [1982] R.P.C. 183.

⁹⁹ *Kirin-Amgen Inc. v Hoechst Marion* [2004] UKHL 46, [2005] RPC 9.

¹⁰⁰ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48, [55] (Lord Neuberger).

that there was no legal certainty.”¹⁰¹ Indeed, as Lord Neuberger argued, the process of taking ‘equivalents’ or ‘immaterial variants’ into account during patent infringement proceedings is not a novel act and, as he views it, there always has been a form of doctrine of equivalence present in English patent law even though the judgments preceding *Actavis* have rejected any doctrine of equivalence. Nevertheless, by referring to Sir Hugh Laddie’s article, Lord Neuberger persuasively made the point that there must be a more principled approach to patent infringement, which is best achieved by adopting the doctrine of equivalence and separating the previously conflated matters of patent claim construction and infringement. The guiding principle here seems very clearly that of legal certainty as well as ensuring that patentees truly may enjoy those rights that have been provided in the EPC and the Protocol. Even though the pre-*Actavis v Eli Lilly* judgments argued that a doctrine of equivalence itself would lead to legal uncertainty, Lord Neuberger’s counterarguments have shown the opposite. In other words, having a doctrine of equivalence leads to more legal certainty because it levels the playing field between patentees and their competitors, and also more strongly supports the purpose of patents, which is to incentivise innovation in technology.

Legal basis for the doctrine of equivalence in Sweden

In Swedish patent law, the legal basis for the doctrine of equivalence is Article 2 of the Protocol as well as patent law tradition. In Sweden, as in other EPC member states, the Protocol entered into force in the end of 2007.¹⁰² However, the concept of equivalence has been known for much longer than the drafting of Article 2 of the Protocol in 2000 and its subsequent entry into force some 7 years later. Therefore, it can be said that the legal basis for the doctrine of equivalence stems from the case law of the Stockholm District Court, the Svea Court of Appeal and the Supreme Court of Sweden. Domeij outlines the development of the Swedish doctrine of equivalence by introducing a line of cases starting with a 1988 judgment of *Lännen Tehtaat Oy v Svedbro Smide Aktiebolag*.¹⁰³ He remarks that this judgment is the first pivotal starting point in the development of the Swedish doctrine of equivalence because from there on the courts took “a critical view towards a doctrine of equivalence based on the notion of a general inventive idea devised by the inventor.”¹⁰⁴ The Stockholm District Court

¹⁰¹ *Ibid* at [53] (Lord Neuberger).

¹⁰² Domeij (2010), 2.

¹⁰³ *Lännen Tehtaat Oy v Svedbro Smide Aktiebolag*, Svea Court of Appeal, case T 356/87 of 7 October 1988.

¹⁰⁴ Domeij (2010), 3.

had held the defendant infringing under the doctrine of equivalence by way of reasoning with reference to the general inventive idea of the patent. Accordingly, as the defendant was found to have exploited the patent's general inventive idea, infringement occurred in spite of "three differences between the patent claims and the accused device."¹⁰⁵ On appeal, the Svea Court of Appeal overturned the first-instance judgment. The principal reason was one of legal certainty, "A patent was not to be interpreted on the basis of a general inventive idea, largely unrestricted by the wording of the claim. Such an interpretation would unduly burden competitors moving into the technical field of the patent who sought a new solution to the problem solved by the patentee (in one way)."¹⁰⁶ The court quashed the approach of a general inventive idea and enumerated that the interpretation of scope of protection of the patent must be consistent with the law, namely Article 69 EPC, which is mirrored in Section 39 of the Swedish Patent Law. The court further stated that the patent claims act as a notice function, which puts third parties in a position of legal certainty with regard to the patent's monopoly. As I see it, the Svea Court of Appeal judgment can be said to have instigated the development of the standard of applying the doctrine of equivalence in Swedish patent law. In its current state, the Swedish doctrine of equivalence has clear limitations in respect of its application from case to case, which is the result of the Swedish patent courts' case law and commitment to furthering legal certainty over the patent monopoly and rights of third parties in relation to the patent monopoly.

In respect of the principles, which support the basis of the doctrine of equivalence in Swedish patent law, Domeij explains that the Swedish doctrine of equivalence has the purpose of safeguarding the worth of patents and most importantly the decrease in value of the patents. He states, "The patent's worth also depends on the possibility of an alternative to a stated feature in a patent claim. Such an alternative may allow competitors to avoid the literal wording of the patent by substituting a feature in the claim. This will usually result in a rapid diminution of the value of the patent. However, one exception to the rule that a patent can be avoided by a departure from the "semantic" meaning of the claim exists under Swedish law on claim interpretation. If an alternative is deemed equivalent to the feature in the claim it constitutes an infringement under the doctrine of equivalence."¹⁰⁷ Thus, there is a principle of protecting the invention and the value, which the invention brings to the society. To afford

¹⁰⁵ *Ibid.*

¹⁰⁶ *Ibid* 4.

¹⁰⁷ *Ibid* 1.

extra protection means that inventors should feel more incentivised to disclose their works, in addition to which investors are satisfied that their investments are met with adequate legal protection.

What is particularly interesting in the Swedish doctrine of equivalence is that the added scope of protection usually extends only to patents of a pioneering status, as was established by the Supreme Court of Sweden in the landmark judgment of *Delaval v Lely*.¹⁰⁸ This suggests that another principle underlying the doctrine of equivalence in Sweden is the desire to provide incentives to new and groundbreaking inventions. In a sense, industrially and socially significant inventions, which pave the path for creating new technology, are encouraged with a larger scope of legal protection. For example, the *Delaval* invention was a case of desirable inventiveness and technological progress. The patent was for a robot, which milks cows on the basis of a pre-determined time having elapsed since the previous milking.¹⁰⁹ The idea is to minimise over-milking and thus optimise milk production, which speaks strongly in favour of economic efficiency in production. The accused infringer, Lely, lost the infringement proceedings all the way from the Stockholm District Court to the Supreme Court of Sweden. There were two proceedings where the first ones concerned Lely's original infringing invention, and the second proceedings concerned Lely's amended infringing invention, which had been patented so as to attempt to escape the "pre-determined time" claim of the *Delaval* patent. However, the courts summarised that the considerable technical advance presented by the *Delaval* invention provided for a large scope of protection, which is why infringement under the doctrine of equivalence was applicable, and permitted *Delaval* to win the proceedings.

Another example is the recent Swedish proceedings in *Actavis v Eli Lilly*¹¹⁰ where the court found the *Actavis* invention to infringe the *Eli Lilly* patent under the doctrine of equivalence. The proceedings correlated with the main English proceedings in *Actavis v Eli Lilly*.¹¹¹ In the Swedish proceedings of the case, one could argue that the court was persuaded by the social significance of the pemetrexed and vitamin B12 based method for treating cancer, which

¹⁰⁸ *DeLaval International AB v Lely Industries N.V. and Lely Sverige AB*, Svea Court of Appeal, case T 13668-99 14 of February 2007.

¹⁰⁹ Domeij (2010), 6.

¹¹⁰ *Actavis AB v Eli Lilly and Company*, Stockholm District Court, case PMT 2097-15 of 31 January 2018.

¹¹¹ *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48.

provides reason to consider that Eli Lilly's patented invention is of a pioneering status, and therefore suitable for the added scope of protection. In my view, the Swedish approach in limiting the application of the doctrine of equivalence to pioneering inventions forms an effective basis for the application of the doctrine, and it is also justifiable in principle because it furthers the aims of patent law, and arguably works in achieving more legal certainty.

Legal basis for the doctrine of equivalence in Finland

In Finnish patent law, the basis for the doctrine of equivalence is highlighted by a certain amount of doubt because it is not entirely clear whether the Finnish Market Court and the higher courts of appeal apply a legitimate doctrine of equivalence. Nevertheless, Finland has ratified the EPC, which entails that Finnish patent law must give effect to Article 2 of the Protocol. Namely, due account of equivalents must be taken. This is a basis in Finnish patent law for considering 'equivalents'. Nonetheless, the Finnish court judgments do not seem to refer to any well-defined legal test for determining the application of the doctrine of equivalence. Instead, the courts often refer to the government proposal ¹¹², which essentially states that Section 39 of the Finnish Patent Law is in accordance with Article 69 EPC and the Protocol. Thus, no additional reforms have been deemed necessary for implementing the Protocol in Finnish patent law.

As I understand it, the courts might extend the standard of normal infringement to equivalent inventions granted that certain circumstances are satisfied. Thus, it might be that Finnish patent law does not differentiate between literal patent infringement and infringement under a doctrine of equivalence, and instead treats both issues under the same standard of patent infringement. Even though the court judgments state that the judges acknowledge the possibility of patent infringement resulting from an equivalent invention, I have not noted any recent case in which any of the courts would have held an equivalent invention infringing a patent. From one perspective, not having introduced a separate doctrine of equivalence for patent infringement might be a measure of legal certainty in Finnish patent law, although the question then arises whether Finnish patent law gives sufficient effect to the EPC and the Protocol. Moreover, is sufficient protection is made available to significant technological

¹¹² Government Proposal number 92 of 2005, cited in Finland as *HE 92/2005 vp*.

inventions? Admittedly, the Protocol does not provide how account of equivalents should be taken, which leaves the matter in the hands the national legislatures and legal practice.

On the other hand, it is possible to analyse the basis for the doctrine of equivalence through Finnish patent law theory. Norrgård has modelled a clear legal test for determining how the doctrine of equivalence could apply in Finnish patent law.¹¹³ The proposed legal test for the doctrine of equivalence is based on Norrgård's comparative research on how German and English patent laws, *inter alia*, have resolved the issue of equivalence, and what types of legal tests those patent laws have developed in response to equivalence. If implemented in Finnish patent law, the legal test would have its basis on the experience and practice of extra-territorial patent law practice. In fact, it is interesting to remark that Finnish courts have the authority by law to accept foreign judgments on civil and commercial issues.¹¹⁴ Thus, it is not unforeseeable that Finnish judges could introduce extra-jurisdictional concepts of patent infringement under the doctrine of equivalence into national law, granted an instance where the judges would find it appropriate to borrow a foreign legal test for the application of the doctrine of equivalence. In addition, Finnish judges and legal practitioners are not unknown to refer to academic literature on the account of which the Finnish Market Court judges and judges of higher instance could readily give effect to Norrgård's model of a clear legal test for the Finnish doctrine of equivalence.

According to Norrgård, the principle behind a Finnish doctrine of equivalence would be the desire to protect inventions, which bring additional value to the industry and which benefit the society.¹¹⁵ Thus, the doctrine of equivalence reflects a sort of labour desert for inventors who strive to make breakthroughs in technology and thus advance the society as a whole. In addition, introducing a doctrine of equivalence in Finnish patent law would also provide for a more principled approach to Section 39 of the Finnish Patent Law, which mirrors Article 69

¹¹³ See pp. 22–23 of the thesis for the formulation of Norrgård's legal test.

¹¹⁴ The Finnish law of procedure (or "*prosessioikeus*" in Finnish) provides for a scheme of mutual recognition of judgments. A key legal instrument is the Brussels Regulation (Regulation of the European Parliament and of the Council on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters [2012] OJ 2 351/01), which facilitates judgment recognition in civil and commercial matters between the signatory states. For more information on mutual recognition of judgments and the procedural law framework, see Frände and others (2004), Ch. 6. 2.

¹¹⁵ Norrgård (2009), 214.

EPC according to which patent claims define the scope of protection. Although the scope of protection always must be found within the meaning of the patent claims, interpreting Section 39 of the Finnish Patent Law as a principle would allow the courts to interpret a wider source of documents of the patent than only the patent claims.¹¹⁶ Traditionally, it would seem that Finnish courts interpret Section 39 of the Finnish Patent Law as a rule rather than a principle, which by definition leads to a harsher standard for considering equivalents in patent infringement proceedings.

Similarities and differences in the legal basis for the doctrine of equivalence

The most apparent similarities between English, Swedish and Finnish patent laws is that each bases the doctrine of equivalence, or the need to take account of equivalents, on Article 2 of the Protocol. The reason is that each of the countries is a member of the EPC. However, the United States is not a member of the EPC. Unlike the other three countries, the basis for the doctrine of equivalence in American patent law is founded on 35 U.S.C § 112 and the case law interpreting that provision. In fact, in American patent law the basis for the doctrine of equivalents dates as far as 1857 when the first case concerning patent infringement under the doctrine of equivalents was judged. The underlying basis for taking equivalents into account in American patent law is the desire to prevent fraud on patents, and to prevent simple adaptations from tarnishing the value of the patent. In addition, there is the further consideration of encouraging inventors to disclose their inventions rather than concealing them, which reflects the ideological purpose of the American patent system.¹¹⁷

Similar to American patent law in terms of the long history of the doctrine of equivalents, English patent law has known a parallel formulation of the doctrine of equivalence well before the entry into force of the EPC and the Protocol. In fact, Lord Cairns had promulgated the doctrine of pith and marrow, largely reminiscent of the current doctrine of equivalence, in as early as 1877. Therefore, it is reasonable to hold that in England there has been a precursor of today's doctrine of equivalence a good century before the entry into force of the EPC and the Protocol. Of course, the development of the doctrine of equivalence in England was not without its obstacles as is evinced by the period between the *Catnic* and *Kirin-Amgen*

¹¹⁶ *Ibid* 212.

¹¹⁷ *Graver Tank & Mfg. Co. v. Linde Air Prod. Co.*, 339 U.S. 605, 608, 856 (1950).

judgments. The concern, as expressed famously by Lord Hoffman in *Kirin-Amgen*, was that the doctrine of equivalence would muddle the otherwise clear waters of the extent of the patent monopoly. After all, defining the scope of a patent is a matter of legal interpretation, and it depends on the analysis of judges. On the other hand, Lord Neuberger in *Actavis v Eli Lilly* argued that the doctrine of equivalence actually brings legal certainty to the rather uncertain area of law of patent claim construction and patent infringement. He found that separating patent claim construction and patent infringement was crucial, and to do so would warrant introducing the doctrine of equivalence into English patent law. The principle underlying this was to give full effect to the EPC and the Protocol, and thus enhance the protection that patentees are entitled to expect.

In contrast to this, Swedish patent law seems to have begun the process of crafting the doctrine of equivalence into a clear shape in 1988 when the Svea Court of Appeal dismissed that the sole basis of the doctrine of equivalence would be the general inventive idea of a patent. This marked the beginning of the development of the Swedish doctrine of equivalence into a more contained and restricted standard giving equal effect to the interests of patentees and third parties as the EPC and the Protocol mandate. As Domeij puts it, the basis for taking equivalents into account in Sweden, even before the entry into force of the Protocol, has been to protect the worth of patents and encourage technological breakthroughs through pioneering inventions. These principles are similar to those in American and English patent laws. In contrast, in Finnish patent law the basis for taking account of equivalents is clearly the Protocol. However, the legal basis for the doctrine of equivalence in Finnish patent law theory is influenced through Norrgård's comparative research of the German and English (*Improver* judgment) standards of the doctrine of equivalence. In addition, as Norrgård argues, the rationale as to why the doctrine of equivalence should be introduced definitively in Finnish patent law is the same as in the other three patent laws: to protect inventions, which bring added value to technology, and benefit the society as a whole.

3. Limitations of the doctrine of equivalence

In the third part of the comparative analysis, the question in light of which the standards of the doctrine of equivalence in the given patent laws are compared is:

How, if at all, has the scope of application of the doctrine of equivalence been limited? In other words, are there predetermined grounds for exclusion of the doctrine of equivalence? Furthermore, is there a certain type of patent that is more likely to benefit from the added scope of protection outside the literal construction of patent claims than a certain other type of patent?

This question follows from the first question because this question looks at how the patent laws have narrowed down the application of the doctrine of equivalence. Thus, even though the patent laws may recognise the application of the doctrine of equivalence, it should not be viewed as a doctrine, which is applied sporadically in an unprincipled way. Therefore, this question explores legal factors, which may bar the application of the doctrine of equivalence. In addition, the question asks whether there are other limitations apart from legal limitations to the application of the doctrine of equivalence by investigating if certain types of patents are more likely to have a greater scope of protection against potentially infringing inventions under the doctrine of equivalence. The reason for exploring these aspects is that patent infringement proceedings involve rigorous balancing between competing interests of patentees and competitors. Allowing too much discretion for the application of the doctrine of equivalence is likely to disturb the balance between patentees and third parties, which is why some patent laws have effective measures of delineating the application of the doctrine of equivalence.

Limitations of the doctrine of equivalence in the United States

In the American patent law, the application of the doctrine of equivalence is delineated by prosecution history estoppel and the public dedication rule. In more detail, “The application of the DOE is... subservient to the doctrine of prosecution history estoppel and the public dedication rule. With respect to prosecution history estoppel, the Supreme Court has established the following rule: ‘When the patentee has chosen to narrow a claim, courts may presume the amended text was composed with awareness of this rule and that the territory surrendered is not an equivalent of the territory claimed.’”¹¹⁸ The concept of estoppel is unique to common law, and although it may have similar and corresponding concepts in Swedish and Finnish laws, it is necessary to outline what estoppel means in American and

¹¹⁸ Reid and others (2018), 379.

English laws. Thus, estoppel is a form of equitable doctrine, which, depending on the type of estoppel, acts to limit either the claimant and/or defendant from raising a certain claim and relying on it during legal proceedings.¹¹⁹ In other words, under estoppel, a party can be prohibited from relying on a certain claim in court, granted that certain factual and legal requirements are present, or have been met.

In the context of prosecution history estoppel, the idea is that the patentee is prohibited from relying on the patent prosecution history to claim that the scope of protection of the patent claims should be broader due to disclosures made during the patent prosecution phase. To make this clearer, patent claims tend to begin as broad when the patentee first enters the process of patent registration through a patent office. However, due to considerations of novelty and inventive step, the patent examiner is likely to reject certain patent claims for being too broad in which case the patentee needs to narrow down the claims in order to satisfy the requirements of novelty and inventive step. The issue here is that narrower patent claims tend to warrant a narrower scope of protection, which is of concern to the patentee. Thus, in American patent law, during patent infringement proceedings the patentee is estopped from attempting to argue for a wider scope of protection on the basis of communication between the patentee and the patent office. However, the patentee can circumvent the presumption that prosecution history estoppel excludes the application of the doctrine of equivalence. To do so, “The patentee must show that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.”¹²⁰ In other words, the patentee needs to be able to prove that it would have been unreasonable to assume the patentee to foresee equivalents at the time of narrowing down the patent claims, and thus include them in the scope of the patent claims. Furthermore, the patentee is able to satisfy this burden by arguing that, “(1) the equivalent was unforeseeable at the time of amendment, and therefore, could not have been claimed; (2) the rationale underlying the amendment was only tangentially related to the equivalent; or (3) some other reason suggesting the patentee could not reasonably be expected to have claimed the equivalent.”¹²¹

¹¹⁹ Wilkie and others (2012), 150.

¹²⁰ *Fest Corporation v Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 741 (2002).

¹²¹ *Ibid.*

In addition the hurdle of prosecution history estoppel, the patent's scope of protection under the doctrine of equivalents is limited by the public dedication rule. Accordingly, "This rule states that subject matter disclosed in a patent specification, but not claimed, is dedicated to the public domain."¹²² The case law on this matter shows that even if the patentee discloses subject matter, but fails to disclose it specifically in the patent claims, the unclaimed subject matter does not fall under the scope of protection of the patent.¹²³ Furthermore, in order for the public dedication rule to occur, "the specification must be specific enough for a person having ordinary skill in the art to identify and understand the disclosed unclaimed subject matter."¹²⁴ Here, the specification refers to a part of the patent application, which specifies what the patented invention is, how it functions and what problem the patented invention solves.

Another limiting factor is the ensnarement rule, which operates on the patentee's claimed range of equivalents under the doctrine of equivalents. Technically, ensnarement is treated as a defence, and this aspect of the ensnarement rule will be discussed in greater detail in the fourth question of the comparison. However, it is important to note that ensnarement is not only a defence to infringement under the doctrine of equivalence, but it also functions to limit the application of the doctrine of equivalence. The *Wilson Sporting Goods* judgment¹²⁵ is key authority on the operation of the ensnarement rule, as Bridges remarks. He outlines, "The court [in *Wilson Sporting Goods*] stated that 'the burden is on [the patentee] to prove that the range of equivalents which it seeks would not ensnare the prior art [products or processes]'."¹²⁶ Thus, this is a significant principle of exclusion of the doctrine of equivalence. The claimant must be able to show that its claimed extent of the scope of protection of the patent is not so wide as to ensnare prior art because doing so is contrary to the rights of the public and third parties. In other words, no patent can extend protection to cover inventions, which the patentee could not have patented in the first place. This encapsulates how ensnarement limits the application of the doctrine of equivalence.

¹²² Reid and others (2018), 379.

¹²³ *Ibid.*

¹²⁴ *PSC Computer Prods., Inc. v Foxconn Int'l, Inc.*, 355 F.3d 1353, 1360 (Fed. Cir. 2004).

¹²⁵ *Wilson Sporting Goods Co. v David Geoffrey & Associates*, 904 F.2d 677 (Fed. Cir. 1990), cert. denied, 113 S. Ct. 537 (1990).

¹²⁶ Bridges (1992), 139–154.

An additional limitation to either allowing or disallowing the application of the doctrine of equivalence concerns the nature of the patent in question. In American patent law, a broader range of equivalents is considered for a patented invention, which is of a pioneering status. Conversely, if the patented invention is a simpler improvement on the state of art, the range of equivalents is narrowed considerably. On this point, “If the claimed invention is merely a minor improvement in a crowded art, the court will most likely apply the doctrine of equivalents restrictively. In other words, the metes and bounds of the patent protection afforded by the Doctrine would not extend far beyond that provided by the literal reading of the claims. Alternatively, if the invention is of “pioneering” status, such as a major breakthrough in the area, courts typically expand the scope of the patent claims to a greater degree.”¹²⁷ According to Bridges, this dichotomy was developed as early as 1889 in the judgment of *Morley Sewing Mach. Co. v Lancaster*¹²⁸ in which the court held, “...If the patented invention is new and of primary character, any later work using substantially similar means to reach the same result is an infringement. However, when the patented invention is simply an improvement by a simple change in form to part of a prior work, one who makes a different change in form to the prior work for the same function as the patented invention does not infringe.”¹²⁹ On this basis, “pioneering” should be construed as something “new and of primary character”, and thus a pioneering invention is not a simple change in form to known state of the art, but instead a more unique invention. Bridges also remarks that in the judgment of *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, the Supreme Court of the United States held, “The range of equivalents varies with the degree of invention.”¹³⁰ This is an important finding by the court because it shows that the application of the doctrine of equivalence ranges from smaller to higher probability the more inventive the invention is. In other words, the application of the doctrine of equivalence is not fixed at absolute terms of inventiveness, but instead a broader range of equivalents can be encompassed when the invention is more pioneering, and thus only a smaller range of equivalents can be encompassed when the invention is simpler.

¹²⁷ *Ibid.*

¹²⁸ *Morley Sewing Mach. Co. v Lancaster*, 129 U.S. 263 (1889).

¹²⁹ *Ibid* at paras [273]–[274].

¹³⁰ *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 415 (1908).

Limitations of the doctrine of equivalence in England

English courts have not stated explicitly what grounds effectively might exclude the application of the doctrine of equivalence. This is to say that there are currently no remarkable restrictions similar to those in American patent law as regards deciding whether some matter of fact or law could bar a patent from obtaining an added scope of protection under the doctrine of equivalence. According to English patent law theory, prosecution history is something that the courts do not take into account save exceptional circumstances, “Can the documents, in particular the correspondence between patent applicants and the examiner which are generated during the examination process, be used by courts as an aid to construction of the patent as granted? In England, the answer is generally no, although there have been exceptional cases where this has happened.”¹³¹

In *Actavis v Eli Lilly*, Lord Neuberger took a stance on prosecution history estoppel, which might be seen as a way of limiting the scope of application of the doctrine of equivalence in English patent law. According to Lord Neuberger, “...reference to the file would only be appropriate where (i) the point at issue is truly unclear if one confines oneself to the specification and claims of the patent, and the contents of the file unambiguously resolve the point, or (ii) it would be contrary to the public interest for the contents of the file to be ignored.”¹³² On that basis, the prosecution history can act as a bar on the application of the doctrine of equivalence if the patentee is precluded from invoking the prosecution history. It would be beneficial for a patentee to be able to invoke the prosecution history so that the patentee may show factually that the scope of protection should be wider than what is apparent from the patent claims. For example, this would be the case where the patentee’s formulation of a patent claim is struck down for being too broad in scope, and thus not meeting the requirements for patent validity, which include novelty and inventive step. There have been cases where judges have found that patent examiners erred in respect of refusing a certain formulation of the patent claims. This leads to a situation where the patent claims likely become overly narrow, which then leads to a narrower scope of protection by reason of Article 69 EPC. In *Actavis v Eli Lilly*, Lord Neuberger indeed discussed his view that the patent examiner at the EPO had erred during the patent examination phase of Eli Lilly’s patent, “It seems to me clear that the reason why the examiner considered that the claims in

¹³¹ Aplin and Davis (2016), 828.

¹³² *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48, [92] (Lord Neuberger).

the patent should be limited to pemetrexed disodium was because the teaching in the specification did not expressly extend to any other anti-folates. It is unnecessary to decide the issue, but, at least as at present advised, I am inclined to think that the examiner was wrong in taking that view.”¹³³ Therefore, the patentee, Eli Lilly, was not estopped from relying on the prosecution history in order to justify why its patent should cover other forms of pemetrexed compounds, and why consequently Actavis’ competitive product infringed Eli Lilly’s patent.

The English standard of the doctrine of equivalence does not express outright what types of patents are more likely to benefit from the additional protection that the doctrine of equivalence can provide. This leads to two suppositions: either all patents are equally capable of fending off immaterial variants, or equivalents, or then England judges simply have not taken the opportunity or found it necessary to decide on this matter – at least yet. However, case law can be revelatory in this respect. In *Actavis v Eli Lilly*, the patented invention, which was found to be infringed by its rivaling invention, is a medicament marketed under the trade mark ALIMTA®.¹³⁴ The patent discloses a method for treating cancer with pemetrexed disodium and vitamin B12.¹³⁵ If one were to draw analogies to American and Swedish patent laws, this invention could be characterised quite easily as a pioneering invention. Of course, it would be hasty to suggest a causal link between biomedical patents and a higher likelihood of the application of the doctrine of equivalence without more cases involving biomedical patents and patent infringement under the doctrine of equivalence.¹³⁶ However, it would be unsurprising to find that post-*Actavis v Eli Lilly*, especially biomedical patents would benefit from the new, revised English standard of patent infringement under the doctrine of equivalence.

¹³³ *Ibid* at para [93] (Lord Neuberger).

¹³⁴ *Ibid* at para [20] (Lord Neuberger).

¹³⁵ *Ibid* at paras [3]–[7] (Lord Neuberger).

¹³⁶ In this respect, Levin raises an interesting point. She states that the doctrine of equivalence is often invoked in relation to method patents, which cover inventions involving chemical compounds. The reason is that there are numerous methods of producing similar or same compounds in differing, yet equivalent ways, which may be obvious to the person skilled in the art. For more discussion on this, see Levin (2017), 320–347.

Limitations of the doctrine of equivalence in Sweden

In the Swedish *Actavis v Eli Lilly* judgment ¹³⁷, the Stockholm District Court elaborated considerations on the basis of which the court could exclude the application of the doctrine of equivalence. Thus, the court held that the type of invention could itself act as a bar to the availability of additional protection through the doctrine of equivalence. The court specified this by explaining that especially the distance between the patented invention and known technology limits the scope of protection of the patent under the doctrine of equivalence. ¹³⁸ The idea is that the closer a patented invention is to known technology, or the state of the art, the less likely it is that the patent claims provide a scope of protection against equivalent inventions. Conversely, if the patented invention is remote from prior art, the higher the probability is that the patent is effective against infringement under the doctrine of equivalence. In addition, the court viewed that if the patentee during the patent prosecution phase deliberately narrowed the scope of protection of the patent in terms of novelty and inventive step in relation to prior art, or if the contested element in the description is stated as especially preferred for the invention, the application of the doctrine of equivalence could be excluded. ¹³⁹ It is to be noted that these conditions do not appear to be exhaustive because the court introduced them as examples of circumstances, which could bar the application of the doctrine of equivalence.

In Swedish patent law, another important factor of limiting the doctrine of equivalence is the principle that a patent may not encroach prior art. Domeij states, “The doctrine of equivalence may not lead to a scope of protection encompassing solutions forming part of the state of the art on the priority date (the so-called Formstein or Gillette defences)... It is only natural that the state of the art bounds the reach of the doctrine of equivalence. What has been in the public domain should not be monopolized later on.” ¹⁴⁰ This limitation is significant because courts cannot construe patent claims so broadly as to impinge on inventions forming part of the state of art. In other words, the doctrine of equivalence cannot extend the patent monopoly to cover something that is already known in the given technology. In addition to this, the Swedish doctrine of equivalence is limited by prosecution history estoppel. According to

¹³⁷ *Actavis AB v Eli Lilly and Company*, Stockholm District Court, case PMT 2097-15 of 31 January 2018.

¹³⁸ *Ibid* 28.

¹³⁹ *Ibid*.

¹⁴⁰ Domeij (2010), 15.

Domeij, “A patentee may not go back on anything he has said or represented to either the Swedish or the European Patent Office. This is important because the vast majority of granted patents have amended or interpreted claims features.”¹⁴¹ Thus, the patentee is estopped from arguing a wide scope of protection if the patent claims have been narrowed down during the patent prosecution phase.

With respect to the types of patented inventions, which are likely to gain a greater scope of protection under the doctrine of equivalence, it has been established in Swedish case law that pioneering inventions benefit from the doctrine of equivalence more than simpler inventions. In respect of this, Domeij remarks, “The most interesting and unusual aspect of Swedish case law though, is, that scope of protection is largely assessed in a balancing of the technical achievements of the patentee and the accused infringer. Equivalents are relevant in cases pertaining to inventions of superior technical and commercial significance, a group sometimes described as pioneering inventions.”¹⁴² Levin concurs, and strongly emphasises that groundbreaking inventions, or so-called pioneering inventions, must be granted a wider scope of protection than more basic inventions.¹⁴³ A key judgment for this matter is *DeLaval v Lely*¹⁴⁴ by the Svea Court of Appeal. The proceedings were instigated already in 1999 at the Stockholm District Court, which issued an interim judgment, which became peremptory in 2002. In 2003, the Stockholm District Court gave its final judgment on the issue of patent infringement under the doctrine of equivalence. The judgment became peremptory in 2007. The Supreme Court of Sweden gave its judgment on the issue of damages payable for the patent infringement in 2011.¹⁴⁵ The actual matter of patent infringement under the doctrine of equivalence was judged in the Svea Court of Appeal. Domeij explains, “In *DeLaval v Lely* the invention was deemed a considerable technical advance over the prior art on the priority date. This was perceived as a prerequisite for application of the doctrine of equivalence. A factor barring application of the doctrine in earlier cases had been that the invention was

¹⁴¹ *Ibid* 17.

¹⁴² *Ibid* 18–19.

¹⁴³ Levin (2017), 316. She makes the distinction between “epokgörande uppfinningar” and “vardagliga småuppfinningar”, which would translate roughly as ground-breaking inventions and small, everyday inventions.

¹⁴⁴ *DeLaval International AB v Lely Industries N.V. and Lely Sverige AB*, Svea Court of Appeal, case T 13668-99 of 14 February 2007.

¹⁴⁵ *Lely Industries N.V. and Lely Sverige AB v DeLaval International AB*, the Supreme Court of Sweden, case NJA 2011 s. 270 of 24 May 2011.

characterized as a simple adaptation of the technology known on the priority day.”¹⁴⁶ Domeij also notes that the Stockholm District Court has taken the opportunity to opine on this matter in *Molok Oy v BISSY Försäljnings AB*.¹⁴⁷ Accordingly, “In *Molok Oy v BISSY Försäljnings AB*, Stockholm District Court held that: ‘A patent on an invention which only forms a combination of individually known and simple elements warrants a restricted scope of protection. The interpretation of the patent claims cannot be allowed to significantly depart from the literal wording.’”¹⁴⁸ On this basis, the general way of the doctrine of equivalence in Swedish patent law seems that simple inventions do not merit as strong a protection as highly innovative inventions. This is a significant bar to the application of the doctrine of equivalence because there is a burden of proof to show that an invention is of a pioneering nature rather than one of close proximity with the state of art. As Domeij characterises it, “No invention deemed a ”simple adaptation” has been granted a range of equivalents.”¹⁴⁹ However, it is interesting to note what the Stockholm District Court held in the Swedish *Actavis v Eli Lilly* judgment that even though an invention may be viewed as simple, it does not mean necessarily that the possibility of infringement by equivalence should be excluded.¹⁵⁰ This poses a slight contradiction to Domeij’s observation and the Swedish courts’ previous stances. However, it is important to bear in mind the context of the Swedish *Actavis v Eli Lilly* judgment. Thus, there might have been pressure on various European patent courts to find infringement under the doctrine equivalence in the *Actavis v Eli Lilly* proceedings because this is the result at which the Supreme Court of the United Kingdom had arrived in the main proceedings. It would seem safer to lean on the rule according to which pioneering inventions are much more likely to obtain protection against equivalents than simpler inventions because this remains still a more established tradition in Swedish patent law.

Limitations of the doctrine of equivalence in Finland

Approaching the model of the legal test for the doctrine of equivalence, which Norrgård has formulated, it is possible to suggest that in Finnish patent law prosecution history as well as the type of patent might restrain the application of the doctrine of equivalence. Of course, as

¹⁴⁶ Domeij (2010), 10.

¹⁴⁷ *Molok Oy v BISSY Försäljnings AB*, Stockholm District Court, case T 18214-98 of 4 April 2000.

¹⁴⁸ Domeij, (2010), 10.

¹⁴⁹ *Ibid.*

¹⁵⁰ *Actavis AB v Eli Lilly and Company*, Stockholm District Court, case PMT 2097-15 of 31 January 2018, p. 28.

has been discussed previously, neither the Finnish Market Court nor the higher appellate courts seem to have established a clear test for applying the doctrine of equivalence, which is why the following analysis on the limitations of the doctrine of equivalence remains theoretical.

As Norrgård notes, the prosecution history is disregarded in Finnish patent law because Article 69 EPC provides that the scope of protection of patents is determined by reference to the patent claims.¹⁵¹ Section 39 of the Finnish Patent Act is harmonised with the provision of Article 69 EPC. On this basis, patentees cannot invoke the prosecution history during infringement proceedings, which has the potential to work against the interests of the patentee in cases where the patent examiner might have been mistaken in a similar way as Lord Neuberger explained in *Actavis v Eli Lilly*.¹⁵² On the other hand, the absolute preclusion from relying on the prosecution history provides for legal certainty, which certainly meets the interests of the public and third parties. If there were a doctrine of equivalence in Finnish patent law, such as the one which has been detailed by Norrgård, it could be argued that one limiting factor on the application of the doctrine would be the Finnish equivalent of prosecution history estoppel.

Furthermore, Norrgård explores the idea of the type of patent as determining whether the doctrine of equivalence should be applied. He presents that, *inter alia*, the economic or therapeutic added value of the patented invention could bear significance in construing the patent claims, especially outside the literal meaning of the patent claims.¹⁵³ It follows that the courts would interpret the scope of protection of a patent more narrowly if indeed the alleged infringing solution brings some extra value, which the patented invention foregoes. On the other hand, if the alleged infringing solution fails to do so, the patented invention enjoys a larger scope of protection.¹⁵⁴ Norrgård also highlights a patent case from the Helsinki Court of Appeal, which distils the approach judges take in relation to the added value of the patented invention. According to the reasoning of the case, the scope of protection of the

¹⁵¹ Norrgård (2009), 247.

¹⁵² *Actavis UK Ltd v Eli Lilly & Co* [2017] UKSC 48.

¹⁵³ Norrgård (2009), 229.

¹⁵⁴ *Ibid.*

patented invention was deemed very narrow due to the modest level of inventiveness.¹⁵⁵ The approach is clearly analogous to that taken in Swedish patent courts where the scope of protection of a patent seems to be expressed as a function of its inventiveness. In fact, Norrgård also discusses the concept of “pioneering inventions”, and explains that in certain patent laws, pioneering inventions are granted a broader scope of protection than “small inventions”. The idea is that the more technology evolves as a result of the invention, the broader the scope of protection the invention merits. The level of “pioneering” is determined through the distance of the invention from known technology. The greater the distance is, the more protection the pioneering invention can get without the scope of protection itself ensnaring prior art.¹⁵⁶

On the basis of the reasoning in theory, Finnish patent law could in practice limit the application of the doctrine of equivalence through the concept of pioneering inventions. Of course, it seems clear in theory what pioneering inventions are. However, in practice it would be a matter of more complexity to define what constitutes a pioneering invention. It might be a matter, which the legislature needs to decide with the help of industry expertise. I am not certain whether judges should decide what amounts to a pioneering invention, unless they are able to do so with guidance from expert witness. Norrgård also takes a critical view of the concepts of “added value” or “pioneering” as determinants for the application of the doctrine of equivalence. A significant issue is whether the patented invention’s added value should be assessed on the patent’s priority date or on the date of patent infringement?¹⁵⁷ If the answer is the former, any added value accrued on the invention after the priority date must be disregarded. Therefore, the commercial success of the invention would remain irrelevant to its inventiveness under this approach. On the other hand, added value through commercial success could be regarded if the determination of the added value were to be crystallised on the date of infringement. This would mean that the proven commerciality of the invention over time would be an important determinant in construing the scope of protection of the patent. Norrgård also opines that taking account of the added value of the patented invention would have important social effects. For example, corporations would focus their research and development on inventions, which the society as a whole appreciates and values. In

¹⁵⁵ Norrgård (2009), 237. The judgment to which he refers is the Helsinki Court of Appeal case, 2253 (S 01/277) of 4 September 2001; cited as *HelHO 4.9.2001 nro 2253 (S 01/277)* in its original form.

¹⁵⁶ Norrgård (2009), 234.

¹⁵⁷ *Ibid* 230.

addition, the patent law theory ramification of taking account of the patented invention's added value is that the patent's scope of protection would be considered as dynamic and not static, even by principle.¹⁵⁸

Similarities and differences in the limitations of the doctrine of equivalence

The most apparent similarity between each of the patent laws is that prosecution history may preclude the application of the doctrine of equivalence. In American, Swedish and Finnish patents laws, the rule that the prosecution history precludes the claimant from claiming a wider scope of protection under the doctrine of equivalence seems stricter than in English patent law. Instead, as Lord Neuberger held in the *Actavis v Eli Lilly* judgment, there are circumstances in which the claimant will not be estopped from relying on the prosecution history. This makes the prosecution history more beneficial to the claimant in English patent law than in the other three patent laws.

Furthermore, American and Swedish patent laws as well as Finnish patent law theory acknowledge that prior art limits the application of the doctrine of equivalence. In American patent law, this limitation owes to the ensnarement rule, which has a similar counterpart in Swedish patent law in the rule against encroaching prior art. In Finnish patent law theory, the same idea that prior art restricts the application of the doctrine of equivalence is found in the fourth question of Norrgård's legal test. According to the fourth question, the doctrine of equivalence may be barred if the alleged infringing solution forms part of the state of art or if it is otherwise obvious in respect of the state of art. In contrast, in English patent there is no clear ensnarement rule, although there is a general principle that prior art limits the granting of a valid patent.

In addition, American patent law has the public dedication rule, which *prima facie* seems unique when contrasted with English, Swedish and Finnish patent laws. Accordingly, anything stated in the patent specification but not in the patent claims is dedicated to the public domain, which means that the elements stated in the patent specification do not form part of the patent monopoly. Of course, Article 69 EPC and the harmonised provisions in the

¹⁵⁸ *Ibid* 229.

patent laws of England, Sweden and Finland might be argued to drive a similar purpose as the public dedication rule.

Finally, American and Swedish patent laws share a strong tradition of extending protection under the doctrine of equivalence mostly to inventions of a pioneering status. This is different to English patent law where no such rule or tradition has been formed. In Finnish patent law theory, Norrgård suggests that the Finnish doctrine of equivalence should apply mostly to inventions of pioneering status. Thus, it can be concluded that a major limitation on the application of the doctrine of equivalence, at least in American and Swedish patent law, as well as Finnish patent law theory, is the nature of the patented invention in terms of how groundbreaking the invention is.

4. Defences under the doctrine of equivalence

In the fourth part of the comparative analysis, the question in light of which the standards of the doctrine of equivalence in the given patent laws are compared is:

What types of defences are available to the defendant, which allegedly has infringed a patent under the doctrine of equivalence?

Defences under the doctrine of equivalence in the United States

In American patent law, the most frequent defences raised against alleged patent infringement, whether it be literal infringement or infringement under the doctrine of equivalents, are non-infringement and patent invalidity.¹⁵⁹ As regards non-infringement, the onus is on the claimant, or patentee, “to prove infringement by a preponderance of the evidence.”¹⁶⁰ The burden on the patentee is to provide evidence that infringement under the doctrine of equivalents has occurred. A failure to do so leads to an end in the infringement proceedings, “When the patentee fails to meet that burden, ‘the patentee loses regardless of whether the accused comes forward with any evidence to the contrary.’ (*Creative*

¹⁵⁹ Reid and others (2018), 381.

¹⁶⁰ *Ibid.* The authors refer to the judgment in *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1123 (Fed. Cir. 1985) in which the court conceded that the burden of proof is on the claimant.

Compounds, LLC v. Starmark Laboratories, 651 F.3d 1303, 1314 (Fed. Cir. 2011).”¹⁶¹

Another available defence to the defendant is to raise a claim of patent invalidity. In doing so, “An accused infringer often argues that the patent-in-suit is invalid for failure to comply with one or more of the statutory patentability requirements. However, an issued patent enjoys a statutory presumption of validity (35 U.S.C. § 282). To overcome the presumption, the challenger must come forward with clear and convincing evidence of invalidity (*e.g.* the Federal Circuit in *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1359-60 (Fed. Cir. 2007) and reaffirmed by the Supreme Court of the United States in *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238, 2242 (2011)).”¹⁶²

In American patent law, there is also a defence specific to infringement under the doctrine of equivalents, which is the ensnarement rule. The central issue concerns how broad a spectrum of equivalents should be protected by a patent under the doctrine of equivalents. In other words, the question courts face with ensnarement analysis is one of determining which equivalent formulations can be said to fall inside the patent’s scope of protection. The equivalents formulations are known as the range of equivalents of the patent. Often, defendants object to claims of infringement under the doctrine of equivalence by referring to some prior art, which discloses patentee’s claimed equivalent formulation of the patented invention. This makes that equivalent formulation of the patented invention both obvious and anticipated, which means that the patent cannot extend protection to that given equivalent formulation. This is the defence function of the ensnarement rule. Bridges states that in *Wilson Sporting Goods*¹⁶³, the Federal Circuit has clarified that the patentee’s proposed range of equivalents during infringement proceedings may not ensnare prior art, and the patentee has the duty to prove that the proposed range of equivalents does not do so. In *Wilson Sporting Goods*, the Federal Circuit formulated the hypothetical patent claim test according to which the patentee has the burden of formulating a hypothetical claim “sufficient in scope to literally cover the accused product.”¹⁶⁴ The next step of the test is to determine whether the Patent and Trademark Office of the United States would have allowed such a claim to be

¹⁶¹ Reid and others (2018), 381.

¹⁶² *Ibid.*

¹⁶³ *Wilson Sporting Goods Co. v David Geoffrey & Associates*, 904 F.2d 677 (Fed. Cir. 1990), cert. denied, Ill S. Ct. 537 (1990).

¹⁶⁴ Bridges (1992), 139–154.

patentable in light of prior art.¹⁶⁵ The hypothetical claim is one, which discloses the alleged equivalent invention on the basis of a literal interpretation of the hypothetical patent claim. The patentee would maintain that this hypothetical claim should be construed within the range of equivalents, which the patent protects because the hypothetical claim is an equivalent of the patent claims of the underlying patented invention. However, if the hypothetical claim is deemed unpatentable in light of prior art, the patentee cannot claim the equivalent formulation within the patent's range of equivalents. This means that the alleged infringer cannot infringe under the doctrine of equivalence given that the equivalent invention is unpatentable itself on the firm basis that a patent cannot ensnare prior art. The ensnarement rule articulated in *Wilson Sporting Goods* was recently reaffirmed in *Jang*¹⁶⁶, which reemphasised that the onus of proving the patentability of the hypothetical claim rests with the claimant, or patentee, and that the defendant's onus simply is to produce relevant prior art, which challenges the patentee's claim of infringement under the doctrine of equivalents.¹⁶⁷

Defences under the doctrine of equivalence in England

In English patent law, Section 77 of Patents Act 1977 lists certain defences, such as private, experimental and prior use, which can render allegations of patent infringement void. Of course, during patent infringement proceedings a defendant may rely on arguments of non-infringement and invalidity. Aplin and Davies state, "Not only is litigation an expensive process, but perhaps more importantly, it also makes one's patent vulnerable to an invalidity challenge. This is because a defendant will usually counterclaim, arguing that even if they have infringed the patent it is in fact invalid. Moreover, in contesting the validity of the patent, particularly on the grounds of novelty or sufficiency, the defendant will force the patent proprietor to put forward an interpretation of the scope of the claims that is not overreaching for the purposes of infringement."¹⁶⁸ In English patent law, patent infringement proceedings and invalidity proceedings are judged during the same court proceedings.

¹⁶⁵ *Ibid.*

¹⁶⁶ *Jang v Boston Scientific Corp.*, 872 F.3d 1275 (Fed. Cir. 2017), pet. for cert. pending (No. 17-1332, filed Mar. 21, 2018).

¹⁶⁷ Kuelthau (2018).

¹⁶⁸ Aplin and Davis (2016), 840.

In view of the developments as a result of the *Actavis v Eli Lilly* judgment, there currently is no defence specific to infringement under the doctrine of equivalence. However, the availability of a type of *Formstein* defence¹⁶⁹ was discussed *obiter dictum* by judge HHJ Hacon in the *Technetix* judgment.¹⁷⁰ In the *Formstein* judgment, the German Federal Supreme Court (‘*Bundesgerichtshof*’) ruled that in patent infringement under the doctrine of equivalence, the alleged infringer has a defence to infringement if the alleged infringing invention would have been unpatentable for lack of novelty or inventiveness on the priority date of the patent. In *Technetix*, HHJ Hacon would have found infringement under the doctrine of equivalence if the patent in suit had been valid. However, the judge found the patent to lack novelty over prior art, which led to the nullity of the infringement claims. Nonetheless, the judge wrote valuable *obiter dicta* over the issue of defences to infringement under the doctrine of equivalence. Citing the traditional *Merrell Dow* judgment¹⁷¹, HHJ Hacon reminded that making available a defence to an alleged infringing invention, which lacks novelty or inventive step over prior art, is a “basic principle of patent law in the United Kingdom.”¹⁷² The judge expressed doubts as to whether the defence would be applicable to infringement under the doctrine of equivalence. She viewed it would be surprising if the Supreme Court of the United Kingdom had had the intention to abandon the *Merrell Dow* principle in *Actavis v Eli Lilly* without doing so in express terms.¹⁷³ Furthermore, she opined that if the *Formstein* defence exists in English patent law, the defendant would have been entitled to that defence against the claims of patent infringement under the doctrine of equivalence in the *Technetix* case.¹⁷⁴ This shows the possibility that English courts might soon introduce a new defence, which applies specifically to infringement under the doctrine of equivalence as more cases are being tested under the new standard of patent infringement.

In addition, there has been academic writing on the possibility of importing the ensnarement rule into English patent law in light of the reform of English patent infringement. Jamieson argues, “If it is held that the person skilled in the art reading the patent would naturally

¹⁶⁹ Federal Supreme Court of Justice of Germany, X ZR 28/85, GRUR 1987, 279, IIC 1987, 795, “*Formstein*”.

¹⁷⁰ *Technetix B.V., (2) Technetix Limited and (3) Technetix Group Limited v Teleste Limited* [2019] EWHC 126 (IPEC).

¹⁷¹ *Merrell Dow Pharmaceuticals Inc. v Norton* [1996] RPC 76.

¹⁷² Pratt (2019).

¹⁷³ *Ibid.*

¹⁷⁴ *Ibid.*

presume that claims were not intended to extend to prior art embodiments, then the ensnarement rule could be imported into England via the third of the reformulated Protocol Questions. This would prevent the second of the reformulated Protocol Questions from expanding the scope of protection conferred by a patent to prior art embodiments, and thus ensures that only inventive concepts are protected by patents.”¹⁷⁵ The ensnarement rule acts in a similar way to the *Formstein* defence, although the ensnarement rule acts also as a limiting factor on the range of equivalents of a patent, and thus its function is not limited to that of a defence. Currently, English patent law does not recognise any limiting factors on the doctrine of equivalence, which may lead to difficulties, which concern the idea that a patent may not read on prior art, or ensnare prior art to phrase it differently. To this end, Jamieson states, “Incidentally, introducing the ensnarement rule would also mean that the doctrine of equivalents does not apply to considerations of novelty when assessing the validity of a patent.”¹⁷⁶ This means that neither patent applicants nor the Patent Office would need to take into account the range of equivalents of pre-existing patents in the state art when deciding on granting new patents. The defence aspect of the ensnarement rule seems identical with the *Formstein* defence in that an accused infringing invention, which would be unpatentable on the priority date of the patent, cannot infringe under the doctrine of equivalence.

Defences under the doctrine of equivalence in Sweden

In Swedish patent law, non-infringement and patent invalidity are common defences with which defendants counterclaim the claimant’s claims of patent infringement. Normally, claims of patent infringement and counterclaims of patent invalidity can be judged in the same proceedings. However, Section 61(3) of the Swedish Patent Law provides that claims of patent infringement can be instigated also in separate proceedings upon the request of the claimant or defendant, which means that matters of infringement and invalidity will not be resolved during the same proceedings. These defences are not unique to patent infringement under the doctrine of equivalence, and also apply to literal infringement. However, Domeij remarks a particular aspect, which limits the Swedish courts’ application of the doctrine of equivalence in the infringement proceedings. He observes, “Not mentioned in the *DeLaval v Lely* cases, but held in previous Swedish case law is the point that the doctrine of equivalence

¹⁷⁵ Jamieson (2019), 147–154.

¹⁷⁶ *Ibid.*

may not lead to a scope of protection encompassing solutions forming part of the state of the art on the priority date (the so-called Formstein or Gillette defences)...the principle that the doctrine of equivalence may not encroach upon technology known or available to a skilled person on the priority date is obviously still valid.”¹⁷⁷ In this way, the defendant can claim that the patent claims on a construction through the doctrine of equivalence lead to an unpermitted scope of protection because prior art would be ensnared. For example, the Svea Court of Appeal held in its *Comviq GSM AB v Europolitan AB* judgment¹⁷⁸ that “due to the state of the art on the application date, the doctrine of equivalence cannot produce the scope of protection argued by Comviq.”¹⁷⁹ Thus, the prior art acts both as a limitation as well as recourse for defence, which defendants can invoke to rebut the claims of infringement under the doctrine of equivalence. Domeij further explains, “Everything obvious for a skilled person over the state of the art on the application day is not protected by the doctrine of equivalence. No Swedish court seems as of yet to have expressed this view, but it can hardly be in doubt. Not only what is known on the application day, but also that which is obvious over the known, shall be at the free disposal of everyone.”¹⁸⁰ The defendant only needs to show some prior art in response to allegations of infringement under the doctrine of equivalence in order to challenge the extent of the scope of protection of the patent under the doctrine of equivalence. One possible way is that the defendant states that the alleged infringing invention is not patentable, which consequentially would lead to the impermissibility of the patentee’s claim of patent infringement under the doctrine of equivalence in relation to the given alleged infringing invention. The rationale is that a patent may not encroach prior art.

Defences under the doctrine of equivalence in Finland

Non-infringement and invalidity are standard defences against claims of patent infringement in Finnish patent law. Claims concerning the invalidity of the disputed patent can be judged in the same proceedings as the claims of patent infringement. It used to be that claims of patent infringement and invalidity had to be heard in separate proceedings, and this rule used to be codified in Section 61(2) of the Finnish Patent Law, which eventually was repealed in 2013. Nowadays, Section 20(2) of the fourth chapter in the Law on Court Proceedings in the

¹⁷⁷ Domeij (2010), 15.

¹⁷⁸ *Comviq GSM AB v. Europolitan AB*, Svea Court of Appeal, case T 1512-96 of 23 October 1998.

¹⁷⁹ Domeij (2010), 15.

¹⁸⁰ *Ibid* 16.

Finnish Market Court ¹⁸¹ provides that the Finnish Market Court adjudicates the claims of patent infringement and invalidity during the same proceedings. However, the Finnish Market Court has discretion to stay the proceedings in respect of the claims of patent infringement until the counterclaims of patent validity have been judged peremptorily. ¹⁸² In Finnish patent law, the defences of non-infringement and invalidity are not unique to infringement under the doctrine of equivalence. In addition to this, it is not even clear whether Finnish patent law recognises a formal distinction between literal infringement and infringement under the doctrine of equivalence, which puts into question the existence of defences specific to the doctrine of equivalence in Finnish patent law.

Nonetheless, in Finnish patent law theory it is interesting to note that in the fourth part of Norrgård's legal test for the application of the doctrine of equivalence, the question is, "Was the solution of the infringing invention part of the state of art or was it obvious in relation to the state of art on the priority date of the patent? If the answer is affirmative, there is no infringement under the doctrine of equivalence." ¹⁸³ The idea of this step, as it seems, is to identify potential ensnarement resulting from too broad a construction of the patent's scope of protection. Norrgård also views that prior art limits the possible range of equivalents of the patent given that a patent may not extend so as to cover prior art. He discusses the German *Formstein* and English *Gillette* defences where the *Formstein* defence is specific to infringement under the German doctrine of equivalence, and the *Gillette* defence concerns all types of patent infringement in English patent law. ¹⁸⁴ Influenced by these standards according to which patents may not trespass known technology, Norrgård devised the fourth question so that judges would be able to limit the application of the doctrine of equivalence more efficiently. In addition, this part of the legal test works in favour of the defendant. The question implies that a defendant can counterclaim the claimant's claims of patent infringement under the doctrine of equivalence by referring to prior art, which is ensnared by

¹⁸¹ "Laki oikeudenkäynnistä markkinaoikeudessa 100/2013" as it is known in Finnish law.

¹⁸² Oesch and others (2017), 267.

¹⁸³ Norrgård (2009), 217–218.

¹⁸⁴ It is to be noted that the English *Gillette* defence predates the *Actavis v Eli Lilly* judgment, and was not repealed in the Supreme Court's judgment. This leads to the presumption that the *Gillette* defence still applies in English patent law, although its relevance to the doctrine of equivalence has not been established. For more discussion on the *Gillette* defence, especially in light of the *Actavis v Eli Lilly* judgment, see Harris and Carter (2019).

the patent under the doctrine of equivalence. Likewise, the defendant can claim that due to the obviousness of the alleged infringing invention, it would have been unpatentable on the priority date. This again would mean that the given interpretation of the patent's scope of protection under the doctrine of equivalence is not possible due to ensnarement. As such, the fourth question would introduce a type of *Formstein* or *Gillette* defence in Finnish patent law, and also act as a sort of ensnarement rule to preclude too broad an interpretation of the patent claims under the doctrine of equivalence.

Similarities and differences in defences under the doctrine of equivalence

The apparent similarity is that in each of the patent laws a defendant being accused of patent infringement under the doctrine of equivalence can defend itself by claiming that the accused device does not infringe, or that the patent is invalid for lack of novelty or inventiveness, *inter alia*. In addition, the ensnarement rule is an established defence in American patent law. This defence resembles the *Formstein* defence (established in German patent law in 1988), which as of 2019 would have been allowed in English patent law by reason of HHJ Hacon's *obiter dictum* in the *Technetix* judgment. In Swedish patent law, the ensnarement or *Formstein* type of defence stems from the limitation on the application of the doctrine of equivalence according to which patents may not encroach prior art. Thus, the situation in terms of specific defences against claims of infringement under the doctrine of equivalence is similar to American and English patent laws. The difference is that in Swedish patent law, the defences against infringement under the doctrine of equivalence are more established than in English patent law given that the type of *Formstein* defence in English law has been discussed only *obiter dictum* as of yet. In Finnish patent law theory, Norrgård acknowledges that prior art restricts the application of the doctrine of equivalence, and he has taken this into account while formulating his legal test for the application of the Finnish doctrine of equivalence. The fourth question of his legal test can be said to avail defendants with a type of *Formstein* defence. If a defendant successfully claims that the alleged infringing invention would have been unpatentable on the priority date, or that it otherwise formed part of prior art on the priority date, the patentee's claims of infringement under the doctrine of equivalence fail. Thus, in Finnish patent law theory there seems to be a defence similar to those in American and Swedish patent laws – and similar to that which seems to be in the process of development in English patent law.

IV. Systemisation

1. Similarities

1.1 Legal harmonisation

Many of the similarities between the given patent laws in respect of the standards of the doctrine of equivalence can be traced back to the effects of legal harmonisation.¹⁸⁵ The primary source of legal harmonisation in patent laws across Europe is the EPC and the Protocol. The effects of harmonisation extend towards the granting of patents and the scope of protection of patents. In effect, the observable similarities in the standards of the doctrine of equivalence between English, Swedish and Finnish patent laws can be explained by the effects of legal harmonisation, which Article 69 and Article 1 and Article 2 of the Protocol have set in motion. Sir Hugh Laddie observes, “The major objective of the European Patent Convention (EPC) was to put in place a substantially uniform patent code for Europe. On the grant side this has been achieved by the creation of a central granting authority, the European Patent Office. However many of the benefits to be secured by the creation of the EPO will be undermined if the patents it grants have different effects in the Member States of the EPC.”

¹⁸⁶ He adds, “Article 69 EPC seeks to create a pan-European standard for determining the extent of protection of European patents. A system in which there is a single pan-European standard for determining the scope of protection which is effective during the grant stage but where different and inconsistent standards apply both to issues of validity and infringement in national courts to granted patents is hardly sensible.”¹⁸⁷

On this basis, Article 69 EPC, complemented by the provisions of the Protocol, has led to the harmonisation in the scope of protection of patents, which means that each EPC member state is bound to provide equal measures of protection for patentees. It also follows that assessment of patent infringement should aim at uniformity even though the law does not stipulate this. As Sir Hugh Laddie remarks, it hardly makes any sense that EPC member states give

¹⁸⁵ In this thesis, legal harmonisation is understood as an “integrative process”, which looks for the “best or most economically efficient solution for a socio-legal problem that occurs in several systems.” This understanding of legal harmonisation borrows from Husa (2018), 41. Moreover, this thesis concurs with Husa’s view according to which, “Even a black-letter harmonisation would not bring about genuine harmonisation concerning intrinsic meanings of law.” For this, see Husa (2018), 102.

¹⁸⁶ Sir Hugh Laddie (2009), 3–38.

¹⁸⁷ *Ibid.*

different scopes of protection for patents during patent infringement proceedings because the whole of aim of the EPC is that patent grant and protection should be uniform. In my view, it is against any reasonable expectations of legal certainty that one EPC member state should give a different scope of protection against patent infringement than another EPC member state. After all, a patentee may have obtained a European patent, which means that the patentee should expect the same scope of protection across the EPC member states. On this basis, something worth remarking is the lack of certainty as to how much protection a Finnish patent, or a European patent in Finland, would provide against infringement under the doctrine of equivalence when the Finnish standard is compared to English and Swedish patent laws, which have strikingly clearer doctrines of equivalence.

This uncertainty stems from the overview of the practice of the Finnish Market Court and the higher courts of appeal in Finland, which have not stated an unequivocal and clear legal test for determining how the doctrine of equivalence applies, despite some indications in certain judgments of the Finnish Market Court. It is noteworthy that Article 69 EPC and the Protocol concern claim construction while the matter of patent infringement belongs to the competence of each member state, as Article 64(1) EPC provides. Perhaps, this is a reason as to why there is no clearly discernible doctrine of equivalence in Finnish patent law, especially in comparison with English and Swedish patent laws. Finnish patent law may simply take account of equivalents under the same legal test applied for normal infringement without having a bifurcated legal test as seen in English and Swedish patent laws. It should be borne in mind that this is more or less what English patent law had done with its standard of purposive construction ¹⁸⁸ until 2017 when the Supreme Court of the United Kingdom gave its *Actavis v Eli Lilly* judgment, which significantly reformed the law of claim construction and patent infringement in English patent law.

Nonetheless, it is still pertinent to argue that the scope of protection of patents against equivalent solutions across the EPC member states is more or less harmonised by virtue of Article 69 EPC and the provisions of the Protocol, although the process of harmonisation might be yet to fully materialise in certain member states. This is an important process for setting similar standards in respect of the doctrine of equivalence. However, while legal

¹⁸⁸ This was the English standard of patent infringement as developed in *Catnic* – reaffirmed and further developed in *Improver* as well as *Kirin-Amgen*. For more details on purposive construction, refer to Aplin and Davis (2016), 797–810.

harmonisation explains why the scope of protection of patents across EPC member states is similar, it does nothing in the way of explaining the similarities in the legal tests for determining how the doctrine of equivalence applies. This is because neither Article 69 nor Article 1 or Article 2 of the Protocol provide explicitly how due account of equivalents should be taken. Therefore, that the patent laws in question have similar ways of applying the doctrine of equivalence, and also barring its application under given circumstances, are the result of something more than pure legal harmonisation by legislative means.¹⁸⁹ In addition, the explanation of legal harmonisation is not functionally satisfactory to a full extent because it rules out American patent law on the basis that the United States is not a contracting party to the EPC, or the Protocol for that matter.

1.2 Globalisation of judicial professions

The previous remarks lead to the following explanation as to why there are similarities between American, English and Swedish patent laws, and Finnish patent law theory, in terms of how the doctrine of equivalence is applied, how its application is limited and what means of protection defendants have against claims of patent infringement under the doctrine of equivalence. Given that legal harmonisation through Article 69 EPC and the Protocol are limited to the three of the European states, I think that the similarities as mentioned above are best explained by the phenomenon globalisation of judicial professions, which include the professions of judges, lawyers and legal academics.¹⁹⁰

¹⁸⁹ For example, see Smits (2012), 176. He argues that the more integrated the economy is, the more successful the efforts of legal harmonisation are. However, in a setting as diverse as the European Union, the implementation of unifying measures may not lead to effective harmonisation. With the support of this argument, it is possible to contend that legal harmonisation through the efforts of the EPC have had varying effects despite the underlying goal of unification in patent granting and the scope of protection. Even though the EPC as an international agreement is separate from the European Union, it is notable that England, Sweden and Finland are all members of the European Union. Thus, Smits' observation is applicable, and the reason for lack of complete legal harmonisation in the context of the EPC might owe to the diversity between the countries in question. Therefore, I view that there must be other influences apart from legal harmonisation, which have given effect to similarities in the standards of the doctrine of equivalence.

¹⁹⁰ Borrowing from the ideas of Husa, this thesis understands globalisation as “transforming legal culture on a global scale” and “clearly something more than positive legal rules and international legal institutions.” See Husa (2018), 37. Moreover, the understanding of legal globalisation in this thesis encompasses “processes by which different organised large-scale normativities become increasingly interconnected and interdependent,

In more detail, the similarities in the legal tests for applying the doctrine of equivalence, which include analysis of the function, way and result of the alleged infringing invention in relation to the patented invention, are the effect of courts borrowing ideas from extra-territorial judicial sources, which include foreign judgments and textbooks on patent infringement. In addition, lawyers draft statements of claim and defence for their clients with the help of influences from foreign standards of the doctrine of equivalence. An idea of particular interest is that globally speaking, pioneering patented inventions enjoy a greater scope of protection, and are likely to be afforded even more protection under the doctrine of equivalence than more basic inventions. In addition, the concepts of prosecution history estoppel and ensnarement as limiting factors, and the prior art defence of ensnarement (or the *Formstein* or *Gillette* defence as known in Europe) are a remarkable similarity between each of the four patent laws. According to my observations, these concepts have moved originally from American patent law into European patent laws through the work of judges, lawyers and legal academics the process of which will be discussed next.

Firstly, it is perceptible that the adjudicatory function of judges is becoming more and more global as judges refer to foreign judgments in order to resolve legal issues, which are unprecedented in the judges' home jurisdictions, and where the judges are aware that a solution for the same or similar issue has been reached in foreign jurisdictions. In this respect, Husa remarks, "Globalising law also affects the way judicial professionals do their work because judges in various courts can draw on each other's ideas in such a way that we are seeing the genesis of transnational judicial communities. Legal reasoning becomes, at least in part, internationalised."¹⁹¹ Arguments presented by Siems add to this discussion through his analysis of legal transplants within comparative law, "Recently, there have also been extensive discussions about citations to foreign judgments in court decisions, which can be conceptualised as a form of legal transplants."¹⁹² He also notes the importance of communication between various courts, "The rise in transnational judicial dialogue is also frequently discussed...For instance, Anne-Marie Slaughter contemplates that the rise in transnational litigation has led to a global community of courts where foreign judges are

crossing the traditional borders of nation-states, intergovernmental organisations and non-governmental organisations." This characterisation is borrowed from Husa (2018), 5.

¹⁹¹ Husa (2018), 34.

¹⁹² Siems (2018), 232.

accepted as fellow professionals.”¹⁹³ The key point is that the legal reasoning judges is becoming more open to external influences, especially from jurisdictions where judges know that a certain type of unprecedented legal issue has been resolved successfully.

The idea of a global community of judges is apparent when reading patent infringement judgments. For example, Lord Neuberger discussed the role of foreign judgments as a form of persuasive authority on the decision-making process of the Supreme Court of the United Kingdom in *Actavis v Eli Lilly*. He discussed the legislative framework of the EPC and the Protocol in relation to which he stated, “In that connection, as the Supreme Court observed in *Schütz (UK) Ltd v Werit (UK) Ltd (Nos 1 to 3)* [2013] Bus LR 565; [2013] RPC 16, para 40, ‘complete consistency of approach’ between different national courts of the EPC states ‘is not a feasible or realistic possibility at the moment’, but nonetheless ‘it is sensible for national courts at least to learn from each other and to seek to move towards, rather than away from, each other’s approaches’.”¹⁹⁴ In fact, Lord Neuberger referred extensively to French and German patent laws in his pursuit of reformulating the Protocol questions from the previous *Improver* judgment, which eventually formed the three guiding questions in relation to the second limb of the *Actavis v Eli Lilly* legal test. He also studied the German and French standards in regards of defining some circumstances in which the doctrine of equivalence could be applied. The similar can be observed in the Finnish Market Court’s *Eli Lilly and Company and Eli Lilly Finland AB* judgment where the counsel for the claimant presented the court with the English *Actavis v Eli Lilly* judgment as evidence in support of the claimant’s claim for a preliminary injunction against Actavis Group in Finland. Although the Finnish Market Court did not elaborate on how the doctrine of equivalence might operate in Finnish patent law, the court granted the injunction on the basis that the judges held that there was a risk and likelihood of patent infringement. As it seems to me, the judges may have acquiesced the legal reasoning of the English *Actavis v Eli Lilly* judgment in respect of infringement under the doctrine of equivalence even though the Finnish court did not state expressly that they concurred with Lord Neuberger’s formulation of the legal test for patent infringement under the doctrine of equivalence.

What is clear is that foreign judgments affect courts globally, and they do so particularly in cases where the litigants are multinational corporations, which carry out business activities in

¹⁹³ *Ibid* 306.

¹⁹⁴ *Actavis UK Ltd v Eli Lilly & Co UK Ltd & Ors* [2017] UKSC 48, [32] (Lord Neuberger).

most parts of the globe. Examples of these are Eli Lilly Company and Actavis Group, which have featured prominently in patent infringement litigation over the question of patent infringement under the doctrine of equivalence. A quick search on the Internet reveals that both companies are incorporated under the law of the United States, and that both have branched out worldwide through subsidiaries, *inter alia*. A fact of great interest, as has been discussed earlier in the thesis, is that the doctrine of equivalence was developed in American patent law earlier than in English and Swedish patent laws, as well as Finnish patent law theory. An interesting possibility is that corporations export their home jurisdictional standards of patent infringement to other countries as the corporations incorporate themselves abroad in order to operate on wider markets. This would involve the work of lawyers and judges as instrumental to the dissemination of foreign notions into domestic laws. Modéer discusses the influence of American law on Scandinavian legal systems, and Siems too discusses the same phenomenon, namely the ‘Americanisation’ of law.

According to Modéer, “The first foreign language was German and many Scandinavian jurists went to Germany to complete their knowledge in German law and legal science...After World War II (1945)... Major legal influences turned from the German-speaking world south of the Baltic Sea, to those from the West, primarily from the United States and Great Britain.”¹⁹⁵ He also states, “Nowadays, the Americanization of Scandinavian legal cultures has turned into globalization. In such a global legal landscape, the hybridity of laws and legal cultures becomes increasingly characteristic, and this is certainly true of the Scandinavian countries.”

¹⁹⁶ The brief history of legal education and professional training in Scandinavian countries discussed by Modéer elucidates why certain concepts of patent infringement under the doctrine of equivalence may have arrived in Europe in the first place. More specifically, this might explain why for example Swedish patent law has similar established concepts to those of American patent law regarding the application of the doctrine of equivalence, such as pioneering inventions, prosecution history estoppel and ensnarement. In a similar fashion to Modéer, Siems observes, “Since the Second World War, and in particular since the fall of communism, US law has played a growing role in continental Europe. US transplants concern a variety of topics...More generally, it has been said that the legal culture in continental

¹⁹⁵ Modéer (2019), 400–401.

¹⁹⁶ *Ibid* 414.

Europe has gradually become more American.”¹⁹⁷ Modéer and Siems’ observations tie interestingly with the observations concerning the similarities in the application of the doctrine of equivalence. More specifically, I understand that the American doctrine of equivalence is a pioneer for the legal tests, which nowadays are employed in English and Swedish patent law, as well as Finnish patent law theory. Of course, each country has its peculiarities, and therefore the legal tests vary in subtle ways. To justify this, I think Husa makes a strong point about the how foreign legal transplants often take on forms unique to legal cultures, “For instance, one can transplant literally a legal rule or legal institution from one system to another but the actual outcomes may still be completely different because of the surrounding legal cultures.”¹⁹⁸

The role of lawyers and legal academics is just as important as that of judges in introducing foreign influences in a domestic legal culture. This is another reason as to why I believe that the legal tests for the doctrine of equivalence have been able to move from American patent law into English and Swedish patent laws, and also Finnish patent law theory. Husa states, “...taking into account the obvious fact that law and legal ideas do travel when people travel, the global world of law is a world of migrating law. The compressed social space and the internet make this migration effortless.”¹⁹⁹ This idea of migrating law finds support in Siems’ remark about lawyers obtaining their legal education, qualifications and training away from their homelands, “More generally, it has been said that the legal culture in continental Europe has gradually become more American. Indicators are the growing number of US-style casebooks in Europe, European lawyers studying for an LLM at US universities and large US law firm establishing offices in Europe...As international relations scholars discuss American political hegemony, the legal hegemony of the United States may be reflected in changes to legal thinking and consciousness - with or without changes of formal legal rules.”²⁰⁰ A lawyer who has studied abroad is likely to bring back home some doctrinal influences obtained from abroad, and to incorporate such influences into legal practice. This is one possible way in which the doctrine of equivalence may have seeped partly from American patent law practice into English and Swedish patent law practices. However, in Finnish patent

¹⁹⁷ Siems (2018), 243–244.

¹⁹⁸ Husa (2018), 102.

¹⁹⁹ *Ibid* 160.

²⁰⁰ Siems (2018), 243–244.

law practice, it is not clear whether the doctrine of equivalence is established – at least to the same extent as it is in American, English and Swedish patent laws.

It takes much research and work for the counsel for the claimant or defendant to bring forth the best claims in order to win the case. For example, would Eli Lilly Company have won its case in the Supreme Court of the United Kingdom if it had not been for the solicitors and barristers who were aware of the complexities of the doctrine of equivalence, and managed to persuade the court to find infringement under the doctrine of equivalence, incidentally changing the whole law of patent infringement in England? Of course, apart from the work of practicing lawyers, the work of legal academics also influences the processes through which foreign law becomes domestic. Lawyers refer to legal academics' writing as sources and guidelines on how to approach any given issue of law. Equally so, judges refer to academic legal writing when they require assistance in judging the facts of a case in accordance with the law. Siems notes, "In particular, it can be interesting to measure the international impact of academic research, since, possibly the 'most common way in which foreign law permeates national law is through national legal writing'. This may even be the case where the actual law is very different."²⁰¹ An illustrative example of this is Lord Neuberger's leading judgment in *Actavis v Eli Lilly* where he refers to a French textbook ("Azéma and Galloux, *Droit de la propriété industrielle*, 7th ed (2012)") on patent infringement in order to learn about the standard of the doctrine of equivalence in French patent law. France is another EPC member state. In contrast to this, it is interesting to observe how Finnish judges approach legal academic writing in their judgments. Norrgård's book on patent infringement²⁰² is a standard work to which Finnish Market Court judges and judges from higher appellate courts refer.²⁰³ Norrgård's suggested legal test for the doctrine of equivalence in Finnish patent has taken influence from German and English patent law, which means that if Finnish judges were to introduce that legal test into practice in patent infringement proceedings in Finland, foreign patent law would become transplanted as part of Finnish patent law. However, it is not explicit whether the judges have applied this legal test in practice so it cannot be said definitively whether there is a case of foreign seepage in the context of the doctrine of

²⁰¹ Siems (2018), 187.

²⁰² Norrgård (2009).

²⁰³ Wirén (2010).

equivalence in Finnish patent law.²⁰⁴ Nevertheless, academic legal writing is an important source for transmitting ideas around the globe, and certainly this has been one of many ways in which the doctrine of equivalence has been able to emerge beyond American patent law.

1.3 Transnational patent law theories

Another possible way to explain the similarities in the standards of the doctrine of equivalence is the transnational nature of patent law theories, which support the doctrine of equivalence in American, English and Swedish patent laws, as well as in Finnish patent law theory.²⁰⁵ The relevant patent law theories, which I understand are transnational in nature, are the central and peripheral theories as well as the patent bargain theory, which all link to the scope of protection of the patent, and thus they also connect with the doctrine of equivalence.

The central and peripheral theories concern patent claim construction. Sir Hugh Laddie outlines the key elements of each theory, “There are, broadly speaking, two philosophies which can be applied to the determination of the scope of patent protection. According to the first of these, the claims define the outer margins of the monopoly. They are like fence posts used to mark out a piece of territory. This is sometimes called the peripheral theory because the claims mark the outer limits or periphery of the monopoly. The second philosophy is one in which the claims act as a sign-post indicating the area in which the monopoly is to be found but where its full extent is determined by looking at the specification to work out the “inventive contribution” made by the inventor and disclosed to the world in the patent. This is

²⁰⁴ In fact, Wirén (who has sat as a judge in the Helsinki District Court, The Finnish Market Court, and nowadays sits as a judge in the Supreme Administrative Court of Finland) expresses his doubts about Norrgård’s legal test in achieving the appropriate balance between the interests of the patentee and especially those of third parties. Wirén notes this is the key requirement of Article 1 of the Protocol. See Wirén (2010) for more details.

²⁰⁵ To give a precise, workable definition of transnationalism, or transnational law, is something beyond the purpose of this thesis. However, the thesis takes influence from Tuori’s observations according to which, “Transnational law enhances our sensitivity to the spatial and temporal qualities of law; multifaceted qualities, which mainstream legal theory of the twentieth century, with its universalist pretensions, tended to ignore or understood in narrow, positivist terms.” See Tuori (2014), 23 for this source. In addition, Tuori mentions the “...boundaries and cross-boundary connections, typical of law at its various levels and in its two dimensions as a legal order and as legal practice.” See Tuori (2014), 55 for this. On the basis of my understanding of Tuori’s remarks, the thesis considers ‘transnational’ as something, which exists in different places contemporaneously, and which has a cross-boundary connections across different legal spaces.

sometimes called the central definition theory.”²⁰⁶ Thus, it is possible that American, English and Swedish patent laws from their legal theory basis adhere more to the central theory than the peripheral theory. This is so because the central theory allows the scope of protection of the patent to be found outside the strict, literal wording of the patent claims. This certainly would explain in part why these patent laws seem to have ended up with very similar legal tests governing the application of the doctrine of equivalence.

On the other hand, it is possible that Finnish patent law from its legal theory basis adheres formally more to the peripheral theory than the central theory, which might explain why it appears that Finnish courts have not applied the doctrine of equivalence in a purposeful manner. However, as Sir Hugh Laddie remarks about the requirements, which the Protocol stipulates, “The middle-way has to give the public more certainty as to the scope of the monopoly than is provided by the central definition approach but not the maximum certainty which is the main attribute of the peripheral theory approach.”²⁰⁷ What appears to me is that Finnish patent law leans more towards the legal certainty afforded to third parties, which would explain why the doctrine of equivalence is not so pervasive in Finnish patent law, excluding of course the theoretical doctrine of equivalence, which Norrgård has modeled. In contrast, English and Swedish patent laws seem to have found the middle ground more effectively than Finnish patent law. Of course, American patent law with the United States as a non-member of the EPC is not bound by the Protocol, but it is noteworthy that the highly-developed American doctrine of equivalence appears to promote balance between the interests of patentees and third parties, which speaks volumes in favour of a more central theory based approach.

The patent bargain theory also explains why similarities are observable in the standards of the American, English and Swedish patent laws, as well as Finnish patent law theory, in respect of the legal tests for applying the doctrine of equivalence. Chronopoulos states, “Under a contractarian view of the patent system, the contract between the inventor and the state is meant to induce reliance investments by individuals through abstract provisions that are capable of channeling inventive efforts towards the achievement of socially desirable innovations.”²⁰⁸ He explains that the theory behind the doctrine of equivalence is understood

²⁰⁶ Sir Hugh Laddie (2009), 3–38.

²⁰⁷ *Ibid.*

²⁰⁸ Chronopoulos (2020), 138–160.

best in terms of contract, which then justifies why certain jurisdictions offer strong protection for the patentee against those inventions of third parties, which are deemed equivalents. Third parties, which tread the monopolised territory of the patent can be viewed as opportunists and thus, “In a contractual setting, opportunism could be perceived as conduct that falls short of violating any literal terms but which evidently contradicts the reasonable expectations of the other party under the contract.”²⁰⁹ Furthermore, “Patentees face an analogous problem when the state fails to protect them against the appropriation of their inventive concepts by parties that are capable of circumventing the wording of the claims.”²¹⁰ The theory is that a patent is like a contract between the patentee and the state for an exclusive monopoly right in exchange for the full disclosure of the invention for the benefit of the public.

A patent jurisdiction, which makes sure that equivalent inventions are unable to override the rules against patent infringement, and thus freeride the investment behind the patent, is likely to employ a complex doctrine of equivalence to maintain the privity of contract between the state and the patentee. Chronopoulos notes, “In the patent bargain context, the contractual value reaches its maximisation point when protection against infringement by equivalents is provided. The patentee gets an opportunity to internalise the full market value of the inventive concept claimed and the state secures the strongest incentives for innovation.”²¹¹ Therefore, the doctrine of equivalence functions as a way to ensure the rightful performance of the contract, which aims to maximise the value and benefit achieved through the patent.

When thinking about the legal policies behind American and English laws, a general trend is one of freedom of contract and a web of interwoven laws, which aim to facilitate value maximisation in the realm of commercial activities.²¹² Thus, possibly American and English patent laws (post-*Actavis v Eli Lilly* in the case of English patent law) have strong doctrines of equivalence in order to support the policy of freedom of contract, which is important in both laws. In addition, in Swedish patent law there seems to be a strong interest in allowing patentees to maximise the value of the patent with the support of the Swedish doctrine of

²⁰⁹ *Ibid.*

²¹⁰ *Ibid.*

²¹¹ *Ibid.*

²¹² For example, see Moura Vicente (2009), 88. He holds the view that in respect of patent claim construction and infringement, freedom of contract, *inter alia*, seems to be more valued in common law countries than continental, civil law countries.

equivalence.²¹³ This would explain why the three patent laws have such similar approaches to the doctrine of equivalence. On the other hand, in Finnish patent law it is less certain whether the doctrine of equivalence is perceived as necessary for optimising the value of patents in terms of the patent bargain theory. What could explain this is that Finnish judges are wary of appearing to interfere with the role of the legislature. Conversely, the consensus seems that the legislator would amend the patent law if it deemed important to support the value maximisation of patents through the doctrine of equivalence. It is interesting that Norrgård makes similar remarks as Domeij about how the doctrine of equivalence protects the value of the patent²¹⁴, which indicates that his theoretical legal test for the doctrine of equivalence might reflect the patent bargain theory, whereas the Finnish legal practice does not do so – at least in a particularly obvious manner.

2. Differences

2.1 Legal pluralism

The most significant reason for observable differences between the American, English, Swedish and Finnish patent laws in the standards of the doctrine of equivalence is legal pluralism.²¹⁵ That is to say that each patent law has pluralistic characteristics, which make the patent laws distinctive even though they also form a part of a global patent law community. Ways in which the patent laws diverge on the doctrine of equivalence include the concept of pioneering inventions, which is not present in English and Finnish patent laws (although this concept appears in Finnish patent law theory); the ensnarement rule, which is not established in English or Finnish patent laws (although Norrgård maintains a rule akin to ensnarement in his legal test for the doctrine of equivalence); and prior art defences, which are yet to develop

²¹³ See Domeij (2010), 1 for observations about the importance of the worth and value of the patent in relation to the doctrine of equivalence.

²¹⁴ For more details, see Norrgård (2009), 214.

²¹⁵ The thesis employs Tuori's perspective on legal pluralism according to which legal pluralism is a "mediating option, supposedly able to avoid the pitfalls of the extremes of state-sovereigntist particularism and natural law-flavoured universalism." See Maduro and others (2014), 23. In addition, Tuori adds, "The pluralist paradigm is supposed to respect diversity but also to promote the design of procedural and institutional mechanisms for managing 'hybrid legal spaces'; that is, social spaces inhabited by a plurality of legal orders or systems." See Maduro and others (2014), 40. Thus, in the thesis the idea of legal pluralism is that the patent laws express diversity in their standards of the doctrine of equivalence, and that the patent laws draw influences to their doctrines of equivalence through a myriad of socio-legal sources.

in view of the English doctrine of equivalence (in Finland these defences exist in theory but not in practice). This difference sets American and Swedish patent laws markedly apart from English and Finnish patent laws. The obvious reason is that the doctrine of equivalence has not developed fully in England, seen as the reform in patent infringement is still relatively recent. Likewise, in Finnish patent, the doctrine of equivalence is yet to take substantive form in legal practice even though there have been allusions to the existence of the doctrine of equivalence in Finnish patent law practice.

As such, legal pluralism helps understand why differences in this area of law are perceived. In relation to the doctrine of equivalence, there are two important factors, which link under the notion of legal pluralism. One is the plurality of the patent law theories and the second is the type of legal systems, which are common law and civil law in this case. As a preliminary point of reference, “Using pluralism, we can conceive of a legal system as both autonomous and permeable; outside norms (both state and nonstate) affect the system but do not dominate it fully.”²¹⁶ Furthermore, “...in a plural world, eradicating normative conflict is not only impossible, it is undesirable.”²¹⁷ With these observations in mind, understanding why there are such differences to the doctrine of equivalence becomes a more approachable issue. Legal pluralism should not be viewed as something undesirable, which prevents uniformity in legal principles. Instead, it is a foundation, which maintains the unique characteristics of legal systems, such as socio-legal and cultural aspects of the law of a given country. In respect of the EPC member states being compared – England, Sweden and Finland – each of them is a member of the EU (with the obvious exception of England departing ways in the coming year). Article 2 TEU²¹⁸ enshrines the prevalence of pluralism in societies, which form part of the EU. Indeed, pluralism is an important value in European legal culture, and its role extends also to the European Convention of Human Rights (“ECHR”). These are some institutional factors, which in part help understand why pluralism exists in Europe in the first place.

Certainly, the effects of pluralism are will have repercussions in every area of law within Europe. A key manifestation of legal pluralism in the context of the doctrine of equivalence is the patent law theories, which include the periferal and central theories as well as the patent

²¹⁶ Schiff Berman (2012), 25.

²¹⁷ *Ibid* 321.

²¹⁸ Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community [2007] OJ C306/17.

bargain theory, *inter alia*. Depending on which theory a patent jurisdiction employs in context of construing patent claims, differences are prone to emerge. Thus, American, English and Swedish patent laws probably lean more towards the central theory, which gives more protection to the patentee and lessens the protection of third parties. In contrast, Finnish patent law probably leans more towards the peripheral theory, which conversely gives more protection to third parties and lessens that of the patentee. Common arguments against the doctrine of equivalence include the lack of legal certainty in terms of how large the patent monopoly is and the interest of third parties. For example, this was the driving *ratio decidendi* of Lord Hoffman in *Kirin-Amgen* where he opined, “Once the monopoly had been allowed to escape from the terms of the claims, it is not easy to know where its limits should be drawn.”²¹⁹ In a similar fashion, the Finnish Market Court held in its *Merck Sharp Dohme Corp.* judgment that it would be contrary to the degree of legal certainty, which third parties are entitled to expect, if an equivalent not claimed by the patentee in the patent claims were to be protected under the scope of protection of the patent.²²⁰ These lines of reasoning speak in favour of a more peripheral approach to claim construction – although it must be borne in mind that this specific approach in English patent has changed.

What then explains the stance taken in Finland? In his book discussing the rules of law of certain countries within the European Union, Raitio explains that since the times of Ståhlberg, the tradition in Finland has been to give slightly more weight to the notion of legal protection (*‘oikeusturva’*) rather than that of legal certainty (*‘oikeusvarmuus’*). Legal protection is a central right under the Finnish rule of law, and owing to its importance it is codified in Section 21 of the Constitutional Law.²²¹ In addition, Raitio highlights how the Venice Commission has influenced the general understanding of legal certainty: the enforcement of law must be predictable and rational so that private persons are able to organise themselves in accordance with the law.²²² Maybe the Finnish view taken towards the doctrine of equivalence is affected by the Finnish way of conceptualising legal protection and legal certainty. It may very well be that the legislator and judges think that the doctrine of

²¹⁹ *Kirin-Amgen Inc. v Hoechst Marion* [2004] UKHL 46, [2005] RPC 9, [39], [42]–[44] (Lord Hoffman).

²²⁰ *Merck Sharp Dohme Corp. and MSD Finland Oy v Sandoz A/S*, Finnish Market Court, case 708 of 21 November 2017, para [76].

²²¹ Raitio (2017), 82.

²²² *Ibid.*

equivalence induces more lack of legal protection and legal certainty instead of succeeding in achieving legal protection and legal certainty. Perhaps, the rights of third parties in relation to a patent monopoly would be deemed too weak as a result of a more developed and prominent doctrine of equivalence. While it is plausible to argue that the doctrine of equivalence with its more central-theory based approach can compromise legal certainty, Chronopoulos makes a remarkable observation to the contrary in relation to the reform in patent infringement in English patent law, "...Instead of arguing that the new law generates uncertainty, it would be fair to say that it simply requires third parties to be more diligent in calculating the risk of infringing earlier rights." ²²³ Thus, it can be argued that the doctrine of equivalence elicits more legal certainty because a more central-theory based approach balances the interests of patentees and third parties more efficiently than an established practice according to which patentees need to be extremely precise as to what they want to claim as part of the patent monopoly. Sir Hugh Laddie remarks in this respect, "Of course the trouble is that no matter how good one's draughtsmanship, slips occur and it is impossible to anticipate future technical developments. Claim drafting is rather like golf, it looks a lot easier than it is. Claims are designed to set out the tangible manifestation of an inventive concept. It is unrealistic to expect perfect verbal precision." ²²⁴ To expect patentees to define the claimed patent monopoly in a meticulously specific manner is simply unrealistic and bad policy in my opinion.

Another manifestation of legal pluralism in this context is the type of legal system in question. Often, it is presumed that common and civil law function in markedly different ways, which would lead to the occurrence of differences in approach in any area of law. Could this explain why the United States and England as common-law patent jurisdictions might differ from Sweden and Finland as civil-law patent jurisdictions in terms of the doctrine of equivalence? Lundmark remarks, "Those who contend that continental jurists use a different mental process to find the appropriate rule sometimes couch their contention as follows: continental lawyers think systematically; common lawyers think casuistically... these observers are employing casuistic as... the consideration of rules articulated in judicial decisions." ²²⁵ Furthermore, he explains that the general assumption is that "the common lawyer is searching for rules in a case-by-case manner rather than looking for grand

²²³ Chronopoulos (2020), 138–160.

²²⁴ Sir Hugh Laddie (2009), 3–38.

²²⁵ Lundmark (2012), 263.

generalities.”²²⁶ Thus, it could be that differences between American and English patent laws as well as Swedish and Finnish patents laws occur due to reasons of how common law and civil law differ from one another in view of legal reasoning. This argument might flow in theory, but it rather seems in practice that the statement does not hold entirely true. To illustrate this, from my observations American and Swedish patent laws resemble each other more than English and Finnish patent laws in terms of the doctrine of equivalence. Even though the stance in English patent law has changed, the pre-*Actavis v Eli Lilly* standard of patent infringement was markedly different to American and Swedish patent laws at that time. The pre-*Actavis v Eli Lilly* law might be quite similar to the current state of the Finnish law standard of patent infringement, in fact.

Does this then mean that these differences are inexplicable in terms of common law and civil law legal reasoning? Lundmark contends that “no matter which jurisdiction applies more norms (whether statutory or decisional) by analogy, the fact that jurists in that jurisdiction employ this style of reasoning marginally more than jurists in the other jurisdictions cannot justify a blanket generalization that juridical reasoning in that jurisdiction is fundamentally different from the reasoning in the others.”²²⁷ He also quotes the work undertaken by Atiyah and Summers (“*Form and Substance in Anglo-American Law*”), which suggests that the English law relies more on statute than case law, and that this feature distinguishes English law from its American counterpart.²²⁸ Moreover, Lundmark challenges the assumption that Swedish law as a representative of civil law would not give much weight to case law in legal reasoning, “Corresponding to Ross's definition, custom, case law, and doctrine also represent legal sources even if they are not normally regarded as binding. This is because there is no distinction between them as far as the judge is concerned: regardless of whether the norm is found in a statute, a court decision, or elsewhere, it can only have “binding force” if the judge is convinced that it should apply to the case at bench. This view of legal sources defies hierarchical treatment because, in many cases, the norm, which best fits the case in question might not necessarily be the highest ranking norm. The Swedish legal sources should cooperate and not compete with each other.”²²⁹ In essence, case law as precedents can be just

²²⁶ *Ibid.*

²²⁷ Lundmark (2012), 291–292.

²²⁸ *Ibid* 319–320.

²²⁹ *Ibid* 321.

as important in Swedish law (and perhaps by analogy also in Finnish law) as it is in American and English laws.

In greater detail, Domeij even states that the judgments of the Stockholm District Court, Svea Court of Appeal and Supreme Court of Sweden are significant in the development of the Swedish doctrine of equivalence.²³⁰ On the basis of the foregoing, I am not certain whether the differences in approach between the American, English, Swedish and Finnish patent laws in respect of the doctrine of equivalence can be reduced to differences between common law and civil law. Of course, there is a possibility that because civil law legislature differs somewhat from common law legislature, any resulting divergences can reflect in something as specific as patent infringement under the doctrine of equivalence, “With respect to the substance of modern legislation, it has been said that continental European law-makers tend to provide mandatory rules in the public interest, whereas in the common law the focus is on individual rights and responses to market failures. There may also be a link between this difference and the more pronounced role of litigation in common law countries, since litigation favours the use of property rights in order to deal with externalities, whereas civil law countries may prefer strict rules.”²³¹ However, it is not entirely clear to what extent this observation can be linked to the differences between the studied standards of the doctrine of equivalence. Surely, there can be a correlation, but I would be hesitant to suggest a causal relation. Instead, I am more of the opinion that the differences stem from varying patent law theories employed as a foundation to patent law practice by each of the patent laws in question.

2.2 Competing policy considerations

The act of balancing competition law and patent law policies is a further consideration on the basis of which the noticeable differences towards the doctrine of equivalence may be explained. As Aplin and Davis describe it, a patent is essentially a form of monopoly right.²³² This concerns the exclusive nature of the patent: third parties require consent from the patentee to make most kinds of use of the patented invention, and acts without consent often amount to infringement, which can lead to serious consequences for the infringer. Of course,

²³⁰ Domeij (2010), 2.

²³¹ Siems (2018), 54.

²³² Aplin and Davis (2016), 603.

the patent laws provide for certain acts, which are permitted even in the absence of consent although these modest in number. The most common way of obtaining consent from a patentee involves licensing agreements, which can be costly. On the other hand, competition law is a key competence of the EU, which involves a rigorous regulatory framework targeted to prevent distortions caused to competition by high concentrations of monopolistic undertakings and abusive monopolistic behaviour.²³³ In the United States, antitrust law drives the same goals.²³⁴ While monopolies are not prohibited *per se*, they are under tight scrutiny from competition authorities undertaking public enforcement as necessary, in addition to which private persons may instigate private enforcement in response to perceived breaches of the competition rules. It is possible that the doctrine of equivalence is considered generally as an unwarranted extension of the patent monopoly, which is in opposition of competition law policies.

For this reason, perhaps some countries take a more wary stance to the doctrine of equivalence. Oesch and others highlight some of these concerns. They state that the discussion among the public and legal experts has focused lately on the argument that the scope of protection of intellectual property rights is too strong and too broad.²³⁵ More specifically, they underline the concern that patent monopolies may have ramifications in the context of Article 102 TFEU, which prohibits abuse of dominant position in the common market in the European Union.²³⁶ However, they contends that despite the *prima facie* opposing goals of competition law and patent law, the two can be seen as complementing each another because both fundamentally aim to strengthen undistorted competition and social welfare. Thus, both competition law and patent law have the common policy of enhancing competition and innovation while increasing consumer welfare and wellbeing.²³⁷

Despite the optimistic conclusion of the harmonious relation between competition law and patent law, it would not be surprising that a patent jurisdiction would be hesitant to extend protection of the patent monopoly through the doctrine of equivalence. This might explain why Finnish patent law (excluding Finnish patent law theory) seems to have the least flexible,

²³³ Kuoppamäki (2018), 5–23.

²³⁴ *Ibid* 5–6.

²³⁵ Oesch and others (2017), 1.

²³⁶ *Ibid* 260.

²³⁷ *Ibid* 261.

maybe even non-existent standard of the doctrine of equivalence in contrast to American, English and Swedish patent laws. It is known that there is a theoretical doctrine of equivalence in Finnish patent law literature, but the judgments studied do not seem to have given much effect, if any effect at all, to that theoretical model. Instead, it could be that Finnish patent law does not recognise the doctrine of equivalence because the legislator originally did not find it necessary to amend the patent law upon the entry into force of Article 2 of the Protocol, and because the courts have given Section 39 of the Finnish Patent Law a strict rule-based interpretation. This supposedly maintains stronger legal protection for third parties and keeps the number of monopolies to a minimum in conjunction with competition law policies. Even though this argument is speculative, it is worth examining the English pre-*Actavis v Eli Lilly* position as an analogy. Sir Hugh Laddie remarks, “The English legal system has long encouraged and protected freedom of commerce and has an ingrained belief that such freedom can and should only be curtailed by clear and express limitations, whether in legislation or in patents.”²³⁸ He also notes, “Those from a different tradition may feel that patentees deserve all the protection that their contribution to technological advance deserves. These are differences of policy.”²³⁹

Freedom of commerce relies on clear and strict rules as well as rigorous competition law enforcement. Perhaps, the stance in Finnish patent law reflects Sir Hugh Laddie’s observation about the traditional English notion according to which freedom of commerce should not be compromised, and it is also possible that in Finnish patent law the doctrine of equivalence is considered as a hindrance to freedom of commerce. However, this argument goes both ways. Given that English patent law now has abandoned its reluctance towards the doctrine of equivalence, perhaps any possible hesitance towards the doctrine of equivalence in Finnish patent law should be cast away eventually. Moreover, as is argued by Chronopoulos, the doctrine of equivalence allows for the optimal realisation of a patent’s value, which indeed supports freedom of commerce, and encourages investment into technological innovation. In addition, it seems that Sweden, the United States and recently England have managed to find equilibrium between their competition law policies (or antitrust policies) and their respective patent laws, which all feature prominent doctrines of equivalence. Thus, while it is important that any given patent law maintains its unique characteristics in relation to patent

²³⁸ Sir Hugh Laddie (2009), 3–38.

²³⁹ *Ibid.*

infringement, it is my belief that there are persuasive reasons for striving towards a more uniform standard of the doctrine of equivalence.

V. Conclusion

This thesis has studied the standards of the doctrine of equivalence in American, English, Swedish and Finnish patent laws. These standards have been compared through four questions, which look at how the doctrine of equivalence applies, what the legal basis is for the doctrine of equivalence in each respective patent law, how the application of the doctrine of equivalence has been limited, and what defences are available under the doctrine of equivalence to a third party accused of patent infringement. The comparison has shown that American, English and Swedish patent laws, as well as Finnish patent law theory, have similar standards of the doctrine of equivalence. This has been explained by reference to legal harmonisation, globalisation of judicial professions and transnational patent law theories. In addition, the comparison has revealed some differences in the standards of the doctrine of equivalence, which has been explained by reference to legal pluralism and competing policy considerations. The trend, which the comparison has uncovered, is that American and Swedish patent laws resemble each other the most, whereas English law has begun to resemble the American and Swedish standards only recently. The standard of the doctrine of equivalence in Finnish patent law practice is observably different from the standards of American, English and Swedish patent laws. In addition, the comparison has illustrated that there might be an observable global “Americanisation” of patent law in respect of the doctrine of equivalence given that the doctrine of equivalence first occurred in American patent law, and that the other patent laws have begun to incorporate similar standards later. The standard of the doctrine of equivalence in English patent law is reminiscent of those in American and Swedish patent laws, but that resemblance is nowhere near as strong as the resemblance is between American and Swedish patent laws. This is because the latter two have limited the application of the doctrine of equivalence, whereas English patent law does not seem to have done so yet. In Finnish patent law, the doctrine of equivalence is prominent in patent law literature, but the theoretical legal test does not seem to have been put into legal practice. In this way, the doctrine of equivalence in Finnish patent law is markedly different from each of the other patent laws, and the current standard in Finnish patent law is evocative of the standard in English patent law predating the *Actavis v Eli Lilly* judgment.

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